Vol. 1005 Number 1

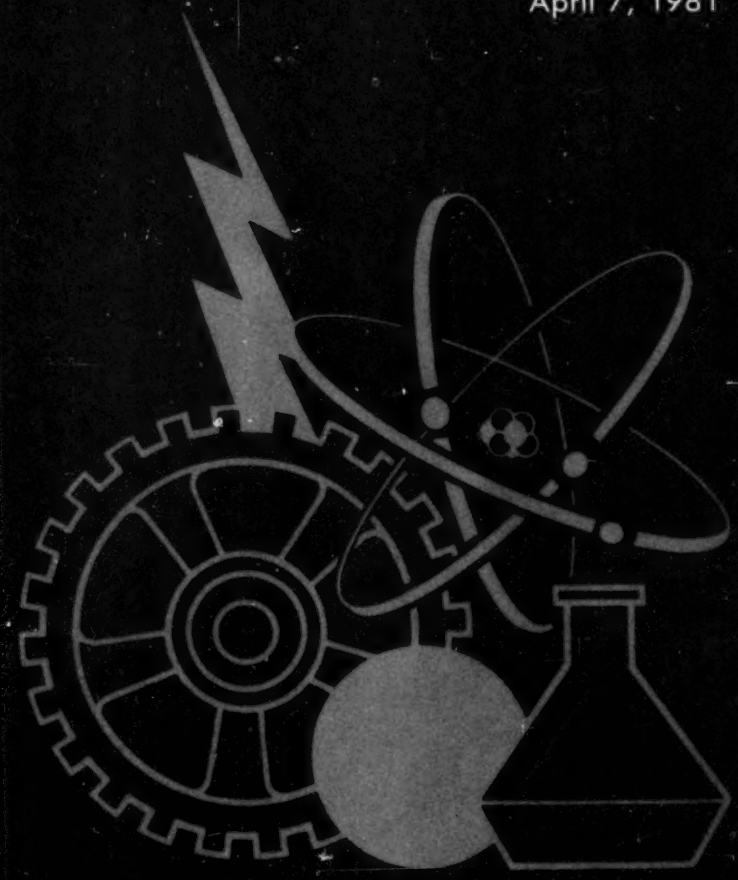
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

April 7, 1981



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

April 7, 1981 Volume 1005 Number 1

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1005 OG 2
1980 Commissioner's Annual Report	1005 OG 2
Reissue Applications Filed	1005 OG 2
Patent Certificates of Correction	1005 OG 4
Disclaimers	1005 OG 4
Feb. 1981 Classification Orders	1005 OG 5
Reference Collections of U.S. Patents	1005 OG 6
Condition of Patent Applications	1005 OG 7
Defensive Publications (100,501)	1
Reissue Patents Granted (30,565)	3
Plant Patents Granted (4,681)	7
Patents Granted	
General and Mechanical (4,259,747)	9
Chemical (4,260,388)	225
Electrical (4,260,848)	353
Design Patents Granted (258,770)	423
Index of Patentees	PI 1
Indices of Applicants of Reissue, Design and Plant Patentees	PI 46
Indices of Applicants of Defensive Publications	PI 48
Classification of	
Patents (Including Reissues)	PI 49
Designs, Plants and Defensive Publications	PI 52
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 53
Designs, Plants and Applicants of Defensive Publications	PI 54
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENTS SECTION), issued weekly, subscription $300.00 per annum for first-class mailing, also available as fourth-class mail at $200.00; foreign first-class mailing rates will be furnished upon request; single copies each, $4.00 domestic, $5.00 foreign.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly, subscription $105.00 per annum, foreign mailing $131.25 per annum; single copies $2.75 each domestic, $3.45 foreign.

GENERAL INFORMATION concerning PATENTS, price $2.25 each.

GENERAL INFORMATION concerning TRADEMARKS, price $1.70 each.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at 50 cents each; PLANT PATENTS in coior, $1.00 each; copies of TRADEMARKS AND DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the list of PCT member countries and the most recent PCT rule changes see the notice appearing at 1001 O.G. 14 in the OFFICIAL GAZETTE of December 9, 1980.

Note that the international fees have been increased as of January 1, 1981. The current schedule of fees is as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International fees	
Basic fee (first 30 pages)	265.00
Basic supplemental fee (for each sheet over 30)	5.00
Designation fee	64.00

SIDNEY A. DIAMOND,
January 13, 1981. *Commissioner of Patents and Trademarks.*

1980 Commissioner's Annual Report

The Annual Report of the Commissioner of Patents and Trademarks for fiscal year 1980 is now in print. Copies may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402 for $3.50 each.

RENE D. TEGTMEYER,
Mar. 11, 1981. *Acting Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

Re. 29,984, Re. S.N. 204,472, Filed Nov. 6, 1980, Cl. 73/177.3, ENGINE IGNITION AND POWER ANALYZER, Peter A. Howes, Owner of Record: *Clayton Manufacturing Co., El Monte, Calif.,* Attorney or Agent: Harold L. Jackson, et al., Ex. Gp.: 244

3,599,814, Re. S.N. 218,879, Filed Dec. 22, 1980, Cl. 414/718, MATERIAL-HANDLING VEHICLE, Keith E. Brownfield, Owner of Record: *The Warner & Swasey Co., Cleveland, Ohio,* Attorney or Agent: Howard G. Massung, Ex. Gp.: 314

3,482,906, Re. S.N. 216,061, Filed Dec. 12, 1980, Cl. 351/160R, ASPHERIC CORNEAL CONTACT LENS SERIES, David Volk, Owner of Record: *Inventor,* Attorney or Agent: Richard J. Egan, Ex. Gp.: 257

3,770,583, Re. S.N. 220,591, Filed Dec. 29, 1980, Cl. 176/76, FUEL ASSEMBLY HOLD-DOWN DEVICE, Ralph H. Klumb, et al., Owner of Record: *Combustion Engineering Lnc., Windson, Conn.,* Attorney or Agent: Eldon H. Luther, et al., Ex. Gp.: 221

3,789,258, Re. S.N. 218,367, Filed Dec. 19, 1980, Cl. 315/13CG, ELECTRON BEAM AND DEFLECTION YOKE ALIGNMENT FOR PRODUCING CONVERGENCE OF PLURAL IN-LINE BEAMS, Robert L. Barbin, Owner of Record: *RCA Corp., New York, N.Y.,* Attorney or Agent: John Farley, Ex. Gp.: 222

3,821,763, Re. S.N. 200,041 Filed Sept. 23, 1980, Cl. 354/94, ANNULAR FIELD OPTICAL IMAGING SYSTEM, Roberic M. Scott, Owner of Record: *The Perkin-Elmer Corp., Norwalk, Conn.* Attorney or Agent: John B. Young, Ex. Gp.: 211

3,826,675, Re. S.N. 211,130, Filed Nov. 28, 1980, Cl. 428/35, LUBRICATED METALLIC CONTAINER STOCKS AND METHOD OF PREPARING THE SAME AND APPLYING ORGANIC COATING THERETO, John R. Smith., et al., Owner of Record: *National Steel Corp., Weirton, W. Va.,* Attorney or Agent: Paul T. O'Neil Ex. Gp.: 164

3,951,164, Re. S.N. 219,322, Filed Dec. 22, 1980, Cl. 137/218, ANTI-SIPHON AND BACKFLOW PREVENTION VALVE, Buckley Crist, Owner of Record: *Jaclo, Inc., Brooklyn, N.Y.,* Attorney or Agent: George Gottlieb, et al., Ex. Gp.: 341

3,976,879, Re. S.N. 216,801, Filed Dec. 15, 1980, Cl. 250/266, WELL LOGGING METHOD AND APPARATUS USING A CONTINOUS ENERGY SPECTRUM PHOTON SOURCE, Ronald E. Turcotte, Owner of Record: *Schlumberger Technology Corp., New York, N.Y.,* Attorney or Agent: Granville M. Brumbaugh, et al., Ex. Gp.: 256

4,030,895, Re. S.N. 219,817, Filed Dec. 23, 1980, Cl. 48/111, APPARATUS FOR PRODUCING COMBUSTIBLE GASES FROM CARBONACEOUS MATERIALS, Robert A. Caughey, Owner of Record: *Forest Fuels Inc., Keene, N.H.,* Attorney or Agent: Sewall P. Bronstein, et al., Ex. Gp.: 173

4,126,506, Re. S.N. 208,277, Filed Nov. 19, 1980, Cl. 156/396, MATERIAL-HANDLING APPARATUS, Josef Marosan, Owner of Record: *Smalands Industrialisering AB, Huskvarna, Sweden,* Attorney or Agent: Henry H. Skillman, Ex. Gp.: 161

4,131,393, Re. S.N. 220,622, Filed Dec. 29, 1980, Cl. 417/22, FLUID PUMP MECHANISM, Haakon T. Magnussen, Jr., Owner of Record: *Altex Scientific, Inc., Berkeley, Calif.,* Attorney or Agent: Robert J. Steinmeyer, et al., Ex. Gp.: 343

4,133,247, Re. S.N. 221,920, Filed Dec. 31, 1980, Cl. 86/20C, CARRIER FOR EXPLOSIVE PRIMER AND METHOD OF USING SAME, Brooke J. Calder, et al., Owner of Record: *Austin Powder Co., Beachwood, Ohio,* Attorney or Agent: James H. Tilberry, et al., Ex. Gp.: 223

4,192,319, Re. S.N. 214,591, Filed Dec. 8, 1980, Cl. 128/748, WICK CATHETER PRESSURE SENSING PROBE AND METHOD OF USE, Alan R. Hargens, et al., Owner of Record: *Regents of University of Calif., Berkeley, Calif.,* Attorney or Agent: Warren T. Jessup, et al., Ex. Gp.: 335

4,194,177, Re. S.N. 220,626, Filed Dec. 29, 1980, Cl. 340/152T, TRANSDUCER SYSTEM FOR CONTINUOUS MONITORING LIQUID LEVELS IN STORAGE TANKS AND THE LIKE, John S. Adamson, Owner of Record: *Chevron Research Co., San Francisco, Calif.,* Attorney or Agent: J. A. Buchanan, et al., Ex. Gp.: 234

4,209,145, Re. S.N. 218,965, Filed Dec. 22, 1980, Cl. 242/204, FAST FORWARD-REVERSE MECHANISM FOR CASSETTE TYPE TAPE RECORDER, Leif O. Erickson, Owner of Record: *Minnesota Mining*

and Manufacturing Co., St. Paul, Minn., Attorney or Agent: Cruzan Alexander, et al., Ex. Gp.: 242

4,209,727, Re. S.N. 219,913, Filed Dec. 24, 1980, Cl. 313/404, APERTURE MASK SUPPORTED BY SPRING LUGS AND SPRING CLIPS, Lawrence B. Hausheer, Owner of Record: *Corning Glass Works, Corning, N.Y.,* Attorney or Agent: John P. DeLuca, et al., Ex. Gp.: 252

4,213,111, Re. S.N. 218,659, Filed Dec. 22, 1980, Cl. 336/65, GROUND LEVEL TRANSFORMER UNIT, Robert J. Lux, Jr., Owner of Record: *Thermodynamics Corp., Broken Arrow, Ok.,* Attorney or Agent: Paul H. Johnson, Ex. Gp.: 213

4,214,790, Re. S.N. 220,990, Filed Dec. 29, 1980, Cl. 297/326, ORTHOPEDIC RECLINING CHAIR, Walter P. Sieber, Owner of Record: *Inventor,* Attorney or Agent: W. L. Hayhurst, et al., Ex. Gp.: 355

PATENT NOTICES

Certificates of Correction for the Week of Apr. 7, 1981

3,729,445	4,218,406	4,233,612	4,238,379
3,927,646	4,219,271	4,233,744	4,238,618
4,004,196	4,219,371	4,233,777	4,238,831
4,110,437	4,219,598	4,234,247	4,238,953
4,142,907	4,220,064	4,234,388	4,239,116
4,143,525	4,220,840	4,234,529	4,239,179
4,154,318	4,220,927	4,234,572	4,239,364
4,155,340	4,222,643	4,234,739	4,239,441
4,160,664	4,223,264	4,234,833	4,239,516
4,167,455	4,224,036	4,234,938	4,239,618
4,170,061	4,224,128	4,234,942	4,239,752
4,170,735	4,224,600	4,234,962	4,239,902
4,172,943	4,224,637	4,234,974	4,239,952
4,175,554	4,224,714	4,234,980	4,239,963
4,181,808	4,225,539	4,235,190	4,239,984
4,186,307	4,225,661	4,235,333	4,240,103
4,187,730	4,225,669	4,235,504	4,240,365
4,188,377	4,226,223	4,235,615	4,240,756
4,189,524	4,227,682	4,235,646	4,240,762
4,191,691	4,228,238	4,235,747	4,240,794
4,195,970	4,228,291	4,235,783	4,240,837
4,196,458	4,228,444	4,235,936	4,240,894
4,199,649	4,228,525	4,235,943	4,241,002
4,202,971	4,228,764	4,235,991	4,241,278
4,202,972	4,228,945	4,235,997	4,241,419
4,203,120	4,228,949	4,236,000	4,241,550
4,204,290	4,229,500	4,236,107	4,241,571
4,205,831	4,229,702	4,236,167	4,241,818
4,205,891	4,229,804	4,236,301	4,242,284
4,206,146	4,229,992	4,236,349	4,242,393
4,207,074	4,230,023	4,236,451	4,242,611
4,207,234	4,230,217	4,236,542	4,242,795
4,207,257	4,230,314	4,236,567	4,243,027
4,207,416	4,230,591	4,236,721	4,243,141
4,208,139	4,230,731	4,236,907	4,243,145
4,208,657	4,231,109	4,236,928	4,243,232
4,211,713	4,231,231	4,237,052	4,243,563
4,211,714	4,231,875	4,237,059	4,243,674
4,212,720	4,231,907	4,237,277	4,243,678
4,213,098	4,231,921	4,237,352	4,243,768
4,215,517	4,231,951	4,237,630	4,244,075
4,216,169	4,231,957	4,237,700	4,244,197
4,216,400	4,232,125	4,237,730	4,245,278
4,217,450	4,232,152	4,237,894	4,245,482
4,217,532	4,232,230	4,237,954	4,245,487
4,218,017	4,232,339	4,237,978	4,246,219
4,218,153	4,233,362	4,238,198	

Disclaimers

3,735,192.—*Leslie Ronald Avery,* Byfleet, England VERTICAL DEFLECTION CIRCUITS UTILIZING BOTH REGENERATIVE AND DEGENERATIVE FEEDBACK FOR GENERATING PARABOLIC VOLTAGES. Patent dated May 22, 1973. Disclaimer filed Jan. 14, 1981, by the assignee, *RCA Corp.*

Hereby enters this disclaimer to claims 1, 2 and 3 of said patent.

3,822,641.—*Egon S. Babler,* Northbrook, Ill. IMPACTOR ASSEMBLY FOR PRINTERS. Patent dated July 9, 1974. Disclaimer filed Jan. 30, 1981, by the assignee, *Teletype Corp.*

Hereby enters this disclaimer to claims 1, 8, 9 and 10 of said patent.

3,871,254.—*Lawrence V. Whistler, Jr.,* and *Lawrence V. Whistler, III,* Kenmore; and *Harold J. Whistler,* Williamsville, N.Y. MEANS FOR PIERCING AND STRIPPING THICK MATERIAL. Patent dated Mar. 18, 1975. Disclaimer filed Jan. 19, 1981, by the inventors.

Hereby enters this disclaimer to all nine claims of said patent.

3,989,271.—*Tilo Riedel,* Eching, Germany. AUTOMATIC BRAKE FOR SKI. Patent dated Nov. 2, 1976. Disclaimer filed Mar. 2, 1981, by the assignee, *S.A. Etablissements Francois Salomon & Fils.*

The term of this patent subsequent to June 22, 1993, has been disclaimed.

4,032,009.—*Robert E. Taylor,* Evanston, Ill. CONTAINER SYSTEM FOR GARAGE DOOR OPENER. Patent dated June 28, 1977. Disclaimer filed Jan. 21, 1981, by the assignee, *Chamberlain Manufacturing Corp.*

Hereby enters this disclaimer to all ten claims of said patent.

4,062,553.—*Tilo Riedel,* Eching, Germany. DEVICE FOR SECURING A PAIR OF SKIS TOGETHER. Patent dated Dec. 13, 1977. Disclaimer filed Mar. 2, 1981, by the assignee, *S.A. Etablissements Francois Salomon & Fils.*

The term of this patent subsequent to June 22, 1993, has been disclaimed.

4,062,562.—*Tilo Riedel,* Eching, Germany. SKI BRAKE WITH STIRRUP-SHAPED SPRING WIRE AND STRETCHER THEREFOR. Patent dated Dec. 13, 1977. Disclaimer filed Mar. 2, 1981, by the assignee, *S.A. Etablissements Francois Salomon & Fils.*

The term of this patent subsequent to June 22, 1993, has been disclaimed.

4,078,824.—*Tilo Riedel,* Eching, Germany. AUTOMATIC SKI BRAKE USING STIRRUP-SHAPED SPRING WIRE. Patent dated Mar. 14, 1978. Disclaimer filed Mar. 2, 1981, by the assignee, *S.A. Etablissements Francois Salomon & Fils.*

The term of this patent subsequent to June 22, 1993, has been disclaimed.

4,078,825.—*Tilo Riedel,* Eching, Germany. SKI BRAKE WITH ELEMENTS ADAPTED TO FORM A TREAD BODY ENGAGEABLE BY A SKI BOOT AND WITH INWARDLY BENT SPRING WIRE. Patent dated Mar. 14, 1978. Disclaimer filed Mar. 2, 1981, by the assignee, *S.A. Etablissements Francois Salomon & Fils.*

The term of this patent subsequent to June 22, 1993, has been disclaimed.

4,078,826.—*Tilo Riedel,* Eching, Germany. SKI BRAKE WITH INCREASED RESILIENCY BETWEEN BRAKE ACTUATOR AND BRAKE BLADE. Patent dated Mar. 14, 1978. Disclaimer filed Mar. 2, 1981, by the assignee, *S.A. Etablissements Francois Salomon & Fils.*

The term of this patent subsequent to June 22, 1993, has been disclaimed.

4,087,113.—*Tilo Riedel,* Eching, Germany. SKI BRAKE. Patent dated May 2, 1978. Disclaimer filed Mar. 2, 1981, by the assignee, *S.A. Etablissements Francois Salomon & Fils.*

The term of this patent subsequent to June 22, 1993, has been disclaimed.

4,143,803.—*Robert E. Taylor,* Evanston, Ill. CONTAINER SYSTEM FOR GARAGE DOOR OPENER. Patent dated Mar. 13, 1979. Disclaimer filed Jan. 21, 1981, by the assignee, *Chamberlain Manufacturing Corp.,*

Hereby enters this disclaimer to claim 1 of said patent.

4,171,138.—*Tilo Riedel,* Eching, Germany. SKI BRAKE. Patent dated Oct. 16, 1979. Disclaimer filed Mar. 2, 1981, by the assignee *S.A. Etablissements Francois Salomon & Fils.*

The term of this patent subsequent to June 22, 1993, has been disclaimed.

4,174,853.—*Tilo Riedel,* Eching, Germany. SKI BRAKE WITH BRAKE ELEMENTS ADAPTED TO FORM A TREAD BODY ENGAGEABLE BY A SKI BOOT AND WITH INWARDLY BENT SPRING WIRE. Patent dated Nov. 20, 1979. Disclaimer filed Mar. 2, 1981, by the assignee, *S.A. Etablissements Francois Salomon & Fils.*

The term of this patent subsequent to June 22, 1993, has been disclaimed.

4,181,321.—*Tilo Riedel,* Eching Germany. COMBINED SKI BRAKE AND FASTENING DEVICE. Patent dated Jan. 1, 1980. Disclaimer filed Mar. 2, 1981, by the assignee, *S.A. Etablissements Francois Salomon & Fils.*

The term of this patent subsequent to June 22, 1993, has been disclaimed.

4,227,714.—*Tilo Riedel,* Eching, Germany. AUTOMATIC SKI BRAKE USING STIRRUP-SHAPED SPRING WIRE. Patent dated Oct. 14, 1980. Disclaimer filed Mar. 2, 1981, by the assignee, *S.A. Etablissements Francois Salomon & Fils.*

The term of this patent subsequent to June 22, 1993, has been disclaimed.

Feb. 1981 Classification Orders

The reclassifications covered by the classification changes below became effective Feb. 1981. These changes will be printed monthly. Addenda information will continue to be printed quarterly.

Classification Order 766, effective Feb. 5, 1981

	Class	Subclasses
Abolished	323	All
Established	323*	201–371; Cross-Reference Art Collections 901–911

*Class 323 Definitions have been revised and are separately available.

Classification Order 767, effective Feb. 5, 1981

	Class	Subclass
Abolished	264	331
Established	264	331.11–331.19; 331.21; 331.22

Classification Order 768, effective Feb. 5, 1981

	Class	Subclasses
Abolished	62	238; 259; 323; 324
Established	62	238.1–238.7; 259.1–259.4; 323.1–323.4; 324.1–324.6

Classification Order 769, effective Feb. 23, 1981

	Class	Subclasses
Abolished	85	All
	151	All
Established	269	48.2–48.4
	411 (NEW)*	1–548; Cross-Reference Art Collections 900–912

Classification Order 770, effective Feb. 26, 1981

	Class	Subclasses
Abolished	179	6; 100.1; 100.11; 100.12; 100.3; 100.4; 100.41
	192	117–124
	274	All
Established	179	6.01–6.20
	369 (NEW)*	1–292
Title Change	428	908

Classification Order 771, effective Feb. 26, 1981

	Class	Subclasses
Abolished	346	74.1; 153
	360	56
Established	346	74.2–74.7; 153.1; 160.1

Classification Order 772, effective Feb. 27, 1981

	Class	Subclasses
Abolished	172	276; 800–809; 277; 767; Digest 1
Established	172	49.5; 54.5; 260.5; 445.1; 445.2; 624.5; 684.5; 701.1–701.3; 772.5; 799.5; 810–834; Cross-Reference Art Collection 900
Title Change	172	9; 21; 47; 76; 97; 190; 451; 719; 763; 772

Classification Order 773, effective Feb. 27, 1981

	Class	Subclasses
Abolished	264	1; 2
Established	264	1.1–1.9; 2.1–2.7

*Newly established Classes 369 and 411 Definitions separately available.

ALFRED C. MARMOR,
Mar. 11, 1981. *Administrator for Documentation.*

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626-7555 Ext. 274
	Sacramento: California State Library	(916) 323-4572
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF Feb. 21, 1981

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-28-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-25-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	10-22-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	1-14-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-17-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—VACANT ..... Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	1-08-79
SPECIAL LAWS ADMINISTRATION, GROUP 220—VACANT ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	9-05-79
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—VACANT ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-14-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	7-09-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-21-78
DESIGN, GROUP 290—C. D. QUARFORTH, Director ..... Industrial Arts; Household, Personal and Fine Arts.	2-12-79
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-06-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	9-06-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	9-13-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	9-26-77
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-17-79

Expiration of patents: The patents within the range of numbers indicated below expire during Feb. 1981, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,120,002 to 3,122,748, inclusive

Plant Patents ..... Numbers 2,350 to 2,367, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED APRIL 7, 1981

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T100,501
INTEGRATED CIRCUIT LAYOUT UTILIZING SEPARATED ACTIVE CIRCUIT AND WIRING REGIONS

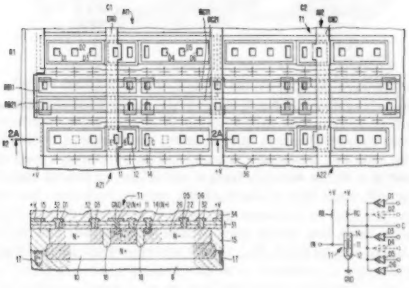
John Balyoz, Deerwood Dr., Hopewell Junction, N.Y. 12533, and Algirdas J. Gruodis, 52 Edgehill Dr., Wappinger Falls, N.Y. 12590

Continuation of Ser. No. 830,715, Sep. 6, 1977, abandoned. This application Jul. 17, 1979, Ser. No. 58,360

Int. Cl.[3] H01L *21/283, 21/44, 23/48*

U.S. Cl. 29—577 C

6 Sheets Drawing. 19 Pages Specification



In the method for fabricating a semiconductor substrate integrated circuit layout including: forming a plurality of spaced-apart circuit cells in columnar arrays within said substrate; forming a first insulating layer above said substrate, said layer having apertures therein to expose selected active regions of said selected cells; the improvement comprising: depositing first and second sets of elongated conductors in substantially parallel relationship atop said first insulating layer in said columnar direction; said first set being disposed directly atop said exposed cells to make selected contact with selected ones of said exposed active regions through said apertures in said first insulating layer; said second set being disposed in areas between said exposed cells; forming a second insulating layer above said first and second sets of conductors, said second insulating layer having apertures therein to expose selected ones of said first and second sets; and depositing a third set of substantially parallel, elongated conductors atop said second insulating layer, orthogonally with respect to said columnar direction, to make selected contact with said exposed ones of said first and second sets through said apertures in said second insulating layer.

T100,502
ELECTRONIC IGNITION CONTROL APPARATUS

Mamoru Kobashi, 270-2, Aza Iwane, Oaza Iwasaki, Nishin-cho, Aichi-gun, Aichi-ken, Japan (470-01); Toru Kawase, 1-1, 3-chome, Hirayama-cho, Toyota-shi, Aichi-ken, Japan (471); Tadashi Hattori, 2-66, Aza Kuyobo, Shinden-cho, Okazaki-shi, Aichi-ken, Japan (444-31), and Yoshiki Ueno, 100-6, Aza Hosoi, Oaza Hishiike, Koda-cho, Nukata-gun, Aichi-ken, Japan (444-01)

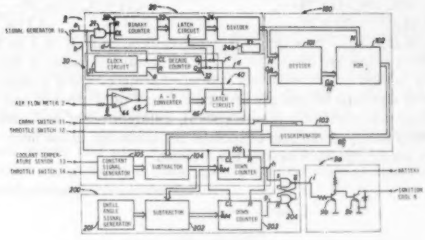
Filed Jul. 19, 1979, Ser. No. 58,923

Claims priority, application Japan, Jul. 20, 1978, 53-89193

Int. Cl.[3] F02P *5/04*

U.S. Cl. 123—416

4 Sheets Drawing. 24 Pages Specification



An electronic ignition control device for determining and maintaining a vehicle at the optimum spark advance for different ranges of crankshaft rotation speeds and ratios of air intake to crankshaft rotation speed. Signals indicating a range in which the instantaneous rotation speed falls and a range in which air intake/speed ratio falls define a ROM address at which is stored an optimum spark advance angle for that combination of ranges. The signal indicating the stored angle is applied to a discriminator which also receives inputs from a crank switch monitor, a throttle switch monitor and a coolant temperature sensor. When cranking or idling is detected, the discriminator substitutes a cranking advance or idling advance angle for the stored optimum advance angle signal.

T100,503
LIQUID EMULSIFIER FOR BREAD

Marcia A. Taylor, 164 Walton Ct., Kingsport, Tenn. 37663, and Gerald D. Neu, Rte. 8, 4313 Beechcliff Dr., Kingsport, Tenn. 37664

Continuation of Ser. No. 930,286, Aug. 2, 1978, abandoned. This application Apr. 10, 1980, Ser. No. 139,064

Int. Cl.[3] A21D *2/14;* **A23D** *5/00*

U.S. Cl. 426—549

No Drawing. 13 Pages Specification

Liquid emulsifiers for bread are prepared by blending diacetyl tartaric acid esters of unsaturated vegetable oil or animal fat, monoglycerides, unsaturated vegetable oil, and propylene glycol monoester of unsaturated vegetable oil or animal fat. Bread prepared from these emulsifiers exhibit excellent physical characteristics.

T100,504

COPOLYESTER HOT-MELT ADHESIVES

Bobby J. Sublett, 1205 Jerry La., Kingsport, Tenn. 37664

Filed Mar. 31, 1980, Ser. No. 136,143
Int. Cl.[3] C08G *63/16*
U.S. Cl. 528—302
No Drawing. 12 Pages Specification

Copolyesters useful as low melting fusible interlining adhesives derived from (1) terephthalic acid, (2) succinic or glutaric acid, (3) ethylene glycol and (4) 1,6-hexanediol or derivatives of these components.

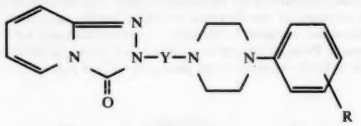
T100,505

TRIAZOLO[4,3-a]PYRIDIN-3(2H)-ONES

Duane F. Morrow, 8200 Berry Dr., Evansville, Ind. 47710, and Yao H. Wu, 9200 Farmington Dr., Evansville, Ind. 47712

Filed Mar. 17, 1980, Ser. No. 130,900
Int. Cl.[3] C07D *00/00*
U.S. Cl. 542—444
No Drawing. 12 Pages Specification

Triazolo[4,3-a]pyridin-3-(2H)-one derivatives containing a 4-(optionally substituted phenyl)piperazinyl component attached to the two position of the triazolo-[4,3-a]pyridine component via a divalent radical such as —$(CH_2)_5$—, —$(CH_2)_6$—, —$CH_3CH(CH_3)CH_2$—, —$CH_2C(CH_3)_2CH_2$—, —$CH_2CH{=}CHCH_2$—, —$CH_2C{\equiv}CCH_2$—, —$CH_2CH_2OCH_2CH_2$— or a divalent cycloalkylene radical of 3 to 6 carbon atoms are disclosed. The compounds are useful in that they exhibit central nervous system pharmacological properties in standard laboratory tests considered predictive of analgetics, anti-psychotic (neuroleptics), antidepressant and anti-anxiety utility. Examples of specific embodiments of the invention are compounds having the formula



Y	R
	3-Cl
	H
	3-Cl
	3-CF_3
	4-F
$CH_2CH{=}CHCH_2$	3-Cl
$CH_2C{\equiv}CCH_2$	3-Cl
$(CH_2)_5$	3-Cl
$(CH_2)_5$	4-CH_3O
$(CH_2)_5$	2-CH_3
$(CH_2)_6$	3-Cl
$CH_2C(CH_3)_2CH_2$	3-Cl
$CH_2CH(CH_3)CH_2$	3-CF_3
$CH_2CH_2OCH_2CH_2$	3-Cl

REISSUES

APRIL 7, 1981

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,565

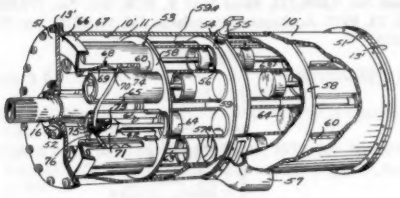
INTERNAL COMBUSTION ENGINE AND OPERATING CYCLE

Haaken H. Kristiansen, Winnipeg, Canada, assignor to Kristiansen Cycle Engines Ltd., Winnipeg, Canada

Original No. 4,022,167, dated May 10, 1977, Ser. No. 546,909, Feb. 4, 1975. Continuation-in-part of Ser. No. 433,237, Jan. 14, 1974, abandoned. Application for reissue Mar. 26, 1979, Ser. No. 23,764

Int. Cl.[3] **F02B** *57/00*

U.S. Cl. 123—43 AA **53 Claims**



14. An internal combustion engine comprising, in combination, a stator including bearing plates located at each end thereof and a common cylinder head to define a first and second cylindrical chamber, said common cylinder head circumferentially spanning at least a portion of said cylindrical chambers; fuel and air inlet means located on said stator; a shaft disposed within said first and second chambers; means for journalling said shaft for rotation within said chambers; a cam ring mounted at each end of said shaft and intermediate said bearing plates; two rotor members, each of said rotor members having a plurality of cylindrical bores disposed annularly around said rotor members; a piston disposed for reciprocal motion in each of said bores in each of said rotors; means for operatively connecting said pistons of each rotor to the profile of a cam ring such that rotation of said rotors causes rotation of said connecting means around said cam ring profile to thereby control the reciprocal motion of said pistons within said bores; and a common combustion chamber formed in said common cylinder head so as to be brought into operative axial alignment with successive ones of the bores in both of said rotors during the rotation of said rotors, said common combustion chamber extending through said cylinder head with the axis thereof parallel to the axes of said rotors to provide direct communication from one side thereof to the other and communicating with opposing bores of said rotors when brought to axial alignment therewith so as to provide common combustion between the pistons of said opposing bores, said common combustion chamber providing ignition by the intermittent overlapping of two adjacent bores during rotation of said rotor thereby providing continuous combustion said air inlet means and said exhaust means being sequentially and operatively connected to said opposing bores from said common cylinder head.

Re. 30,566

RECHARGEABLE SPRAYER

William Horvath, Watchung, N.J., assignor to Thiokol Chemical Corporation, Bristol, Pa.

Original No. 3,790,034, dated Feb. 5, 1974, Ser. No. 226,204, Feb. 14, 1972. Continuation of Ser. No. 485,631, Jul. 3, 1974, abandoned. Application for reissue Nov. 12, 1975, Ser. No. 631,386

Int. Cl.[2] **B67D** *5/32;* **G01F** *11/04*

U.S. Cl. 222—153 **20 Claims**

18. A liquid dispensing device comprising a container adapted to contain a body of liquid to be dispensed and having a tubular side wall and opposite ends, one of said ends being rotatable relative to said tubular wall, a cylinder disposed in said container inwardly of said tubular side wall and in spaced relationship therewith, a piston slidable relative to said cylinder and defining therewith a pressurizable chamber for the liquid to be dispensed, resilient means operatively associated with said piston and biased to tend to produce relative motion between said piston and cylinder in a direction to pressurize said chamber, liquid dispensing means mounted on one of said ends outside said container, first conduit means effectively interconnecting said chamber and said dispensing means, manually operable valve means in said first conduit means for controlling the flow of liquid therethrough, second conduit means interconnecting said body of liquid and said pressurizable chamber, said second conduit means having a check valve therein for preventing flow of liquid from said pressurizable chamber to said body of liquid, cam means for producing relative reciprocating motion of said piston and cylinder in response to rotary movement of said rotatable end and in a direction to compress said resilient means, said cam means comprising a first circular cam effectively secured to said piston and a second circular cam effectively secured to said cylinder, said first and second cams having opposed cam surfaces encircling said resilient means and urged into contact with one another by said resilient means and means for effectively connecting the rotatable end of said container and one of said cams whereby rotation of said rotatable end causes said cam means to produce relative motion of said piston and cylinder to draw liquid from said body of liquid into said pressurizable chamber.

Re. 30,567

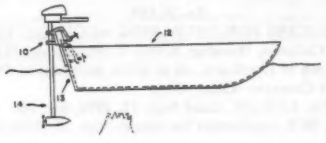
TROLLING MOTOR SAFETY MOUNT

Robert W. Meredith, 8910 Dailey Dr., Little Rock, Ark. 72209, and Norman B. McCreary, 45 Lakeshore Dr., Little Rock, Ark. 72204

Original No. 4,019,703, dated Apr. 26, 1977, Ser. No. 667,827, Mar. 17, 1976. Application for reissue Apr. 4, 1979, Ser. No. 27,283

Int. Cl.[2] **B63H** *21/26, 21/30*

U.S. Cl. 248—642 **16 Claims**



1. Apparatus for mounting a trolling motor or the like to the stern section of a boat, said apparatus comprising

clamping means for releasable clamping engagement with the stern section of a boat,

a hollow mounting block having closed top and side walls thereof, and an open bottom end thereof, said mounting block having the proper dimensions to receive a mounting clamp for a trolling motor or the like thereon,

means for pivotally mounting said mounting block to said clamping means so that a motor clamped to said mounting block can be pivoted from a first position wherein it is in stable operating position in water in which the boat is disposed with the mounting block open end abutting a portion of said clamping means, to a second position wherein the motor is closer to the water's surface then in said first position and said open end of said mounting block does not abut a portion of said clamping means, to a

third position wherein the motor is generally pivoted out of the water,

detent means located within the area defined by said hollow mounting block when said block is in said first position for releasably latching said mounting block in said first position so that the normal thrust of a motor mounted on said mounting block will not cause said mounting block to be pivoted to said second position, but so that should the motor on said mounting block strike an object that is underwater said mounting block will be moved to said second position, and so that after the underwater object is passed by the motor, the normal weight of the motor and the mounting block will move said mounting block back to said first position and cause said detent means to latch said mounting block in said first position, and

means separate from said detent means for locking said mounting block in said third position when manually moved to said third position.

Re. 30,568

MODIFIED, PRECIPITATED ALUMINO SILICATE PIGMENTS

Robert C. Fitton, Churchville, Md., assignor to J. M. Huber Corporation, Locust, N.J.

Original No. 3,909,286, dated Sep. 30, 1975, Ser. No. 452,496, Mar. 18, 1874. Continuation-in-part of Ser. No. 198,022, Nov. 5, 1971, Pat. No. 3,798,046. Application for reissue Sep. 30, 1977, Ser. No. 838,354

Int. Cl.[3] **C09C** *1/02, 1/28, 1/40*

U.S. Cl. 106—306 **58 Claims**

7. A finely divided precipitated, white powdery composition comprising chemically bound oxides of an alkaline earth metal selected from the group consisting of magnesium, calcium, barium, or combinations thereof; sodium; aluminum; and silicon in a uniform matrix substantially all of the particles of which are less than 1 micron in diameter, the molar ratio of SiO_2 to Na_2O being at least about **4** to **1** and the molar ratio of Na_2O to Al_2O_3 being from about **0.8** to **1.4:1**, said alkaline earth metal oxide being present in an amount of from about **0.1** to **8** percent based on the dry weight of the composition having a specific gravity of **2.0** to **2.4**; said composition further having a LOI in the range of from about **6.38** to **9.7%** by weight; an oil absorption in the range of from about **108** to **170** cc/**100** g and a surface area in the range of from about **59** to **176** M^2/g.

Re. 30,569

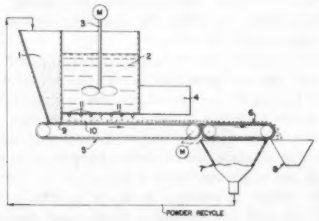
PROCESS FOR PREPARING AGGREGATES

James L. Callahan, Wooster; Arthur F. Miller, and Wilfrid G. Shaw, both of Lyndhurst, all of Ohio, assignors to The Standard Oil Company (Ohio), Ohio

Original No. 3,848,033, dated Nov. 12, 1974, Ser. No. 271,387, Jul. 13, 1972. Application for reissue Nov. 26, 1976, Ser. No. 745,027

Int. Cl.[3] **B29D** *23/00*

U.S. Cl. 264—13 **9 Claims**



1. A process for preparing aggregates comprising

(a) preparing a slurry, said slurry comprising a suspending liquid and distinct particles of a first solid suspended in said liquid;

(b) preparing a particle bed consisting of particles of a second solid;

(c) forming droplets of said slurry; and

(d) dropping said droplets of said slurry into said particle bed *in such a manner that the total droplet is not immersed in the powder and* under conditions where said suspending liquid is at least partially removed from the slurry droplet to form an aggregate of said distinct particles of said first solid *having a void center.*

Re. 30,570

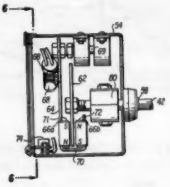
BELT SWITCH

Frank K. Hurt, North Tazewell, Va., assignor to Mefcor, Inc., Bluefield, Va.

Original No. 4,088,222, dated May 9, 1978, Ser. No. 771,855, Feb. 23, 1977. Application for reissue Jul. 16, 1979, Ser. No. 58,228

Int. Cl.[3] **H01H** *3/12*

U.S. Cl. 200—61.39 **7 Claims**



9. A rotary switch for detecting the rotation of a shaft above a predetermined speed comprising:

a conductive disc attached to said shaft for rotating with said shaft;

a pendulum mounted adjacent to said conductive disc, said pendulum being weighted to a normal position but being free to rotate about an axis, said pendulum having permanent magnets attached thereto adjacent to said disc having flux coupling with said disc; and,

a gravity actuated switch means mounted on said pendulum for responding to a change in the attitude of the pendulum when said pendulum is rotated about said axis in response to rotation of said shaft and conductive disc.

Re. 30,571

RADIATION-SENSITIVE CONTROL CIRCUIT FOR DRIVING LAMP AT VARIOUS POWER LEVELS

Gerald Bachur, San Jose, and George E. Richardson, Santa Clara, both of Calif., assignors to Optical Associates, Inc., Santa Clara, Calif.

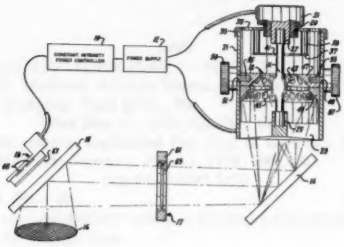
Original No. 4,024,428, dated May 17, 1977, Ser. No. 578,915, May 19, 1975. Application for reissue Apr. 18, 1979, Ser. No. 31,211

Int. Cl.[3] **G03B** *27/78;* **H05B** *41/38*

U.S. Cl. 315—151 **12 Claims**

10. An exposure system comprising a lamp, a power supply for driving said lamp at an idle level which optimizes the life of said lamp, means for driving light from said lamp through a light path to an exposure plane, exposure means for controlling the exposure period during which light at a preselected level from said lamp reaches the exposure plane, light detector means in the light path coordinated with said exposure means for detecting the light intensity from said lamp during the exposure period, and a control circuit connected to said power supply, said control circuit being responsive to said light detector for adjusting said power supply to provide the preselected level of light output from said lamp during the exposure period, said control circuit including means for

adjusting the power to said lamp above or below the idle level, and a summing circuit connected to said light detector for producing



an output to cause an increase or a decrease in the power to said lamp.

Re. 30,572

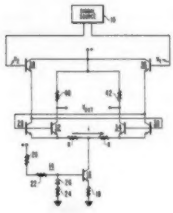
LOW DISTORTION SIGNAL AMPLIFIER ARRANGEMENT

Steven A. Steckler, Clark, N.J., assignor to RCA Corporation, New York, N.Y.

Original No. 4,081,758, dated Mar. 28, 1978, Ser. No. 690,721, May 27, 1976. Application for reissue Mar. 26, 1979, Ser. No. 23,952

Int. Cl.[3] H03F *3/45*

U.S. Cl. 330—252 **11 Claims**



7. In a signal amplifier arrangement having

first and second transistors of a like conductivity type having respective base and emitter and collector electrodes and having respective base-emitter junctions;

means for applying current to an interconnection between the emitter electrodes of said first and second transistors of a polarity tending to forward bias their respective base-emitter junctions;

means for applying operating potentials to the collector electrodes of said first and second transistors;

means responsive to the collector current of said first transistor for supplying an output signal;

first conductive means for providing between first and second points a conductance related to at least a portion of the conductance of said first transistor base-emitter junction;

second conductive means for providing between third and fourth points a conductance related to at least a portion of the conductance of said second transistor base-emitter junction;

means for causing a current proportionally related to the emitter current of said second transistor to flow through said first conductive means to develop a potential drop thereacross;

means for causing a current proportionally related to the emitter current of said first transistor to flow through said second conductance means to develop a potential drop thereacross;

means offsetting the base potential of said first transistor from a first input voltage in an amount proportional to the potential drop across said first conductive means for suppressing distortion terms in said output signal; and

means offsetting the base potential of said second transistor from a second input voltage in an amount proportional to the potential drop across said first conductive means for suppressing distortion terms in said output signal the improvement wherein:

said first and second input voltages are respectively applied at said first point and at said third point;

said second point is at the base electrode of said first transistor;

said fourth point is at the base electrode of said second transistor;

said means for causing a current proportionally related to the emitter current of said first transistor to flow through said second conductive means comprises a third transistor of said like conductivity type having a base electrode to which is applied a base potential equal to the base potential at the base electrode of said first transistor, having an emitter electrode to which is applied an emitter potential equal to the emitter potential at the emitter electrode of said first transistor, and having a collector electrode connected to said fourth point; and

said means for causing a current proportionally related to the emitter current of said second transistor to flow through said first conductive means comprises a fourth transistor of said like conductivity type having a base electrode to which is applied a base potential equal to the base potential at the base electrode of said second transistor, having an emitter electrode to which is applied an emitter potential equal to the emitter potential at the emitter electrode of said second transistor, and having a collector electrode connected to said second point.

PLANT PATENTS

GRANTED APRIL 7, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,681
MINIATURE ROSE PLANT—MEICUBASI VARIETY

Marie L. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Dec. 11, 1979, Ser. No. 102,412
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1978, ROS 278; Denmark, Jan. 31, 1979, 1002/79
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of Miniature rose plant characterized by the fact that:

from a physical point of view, the plant with light green adult wood is bushy and produces double flowers of attractive form which are shiny velvety red currant red in color, the petals of which are consistent and possess a small whitish unguis on both faces; and

from a biological point of view has vigorous vegetation, abundantly forms flowers of long duration having petals which drop off cleanly, and average resistance to diseases;

substantially as shown and described.

4,682
MINIATURE ROSE PLANT—MEIJIKATAR VARIETY

Marie L. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Dec. 11, 1979, Ser. No. 102,417
Claims priority, application Denmark, Jan. 21, 1979, 1004/79
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of Miniature rose plant characterized by the fact that:

from the physical point of view, the plant with brownish green adult wood is bushy and produces double flowers of attractive form which are brilliant vermillion red in color having petals of good substance; and

from the biological point of view has vigorous vegetation, abundantly forms flowers of long duration, having petals which drop off cleanly, and average resistance to diseases;

substantially as shown and described.

4,683
ALMOND TREE

Earl Smith, 2764 N. Leonard, and Alba E. Wimer, 2826 N. Leonard, both of Fresno, Calif. 93727

Filed Dec. 14, 1979, Ser. No. 103,545
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—30 **1 Claim**

1. A new and distinct variety of almond tree substantially as shown and described.

4,684
GREEN ASH TREE

Richard H. Patmore, Brandon, Canada, assignor to Jacob J. Driedger, Brandon, Canada

Filed Apr. 27, 1979, Ser. No. 34,153
Int. Cl.[3] A01H *5/12*
U.S. Cl. Plt.—51 **1 Claim**

1. A new and distinct variety of Green Ash tree substantially as herein shown and described, characterized particularly as to novelty by seedlessness, dark green glossy leaves and hardiness in northern climates.

4,685
ILEX PLANT - MESID VARIETY

Kathleen K. Meserve, St. James, N.Y., assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Aug. 7, 1979, Ser. No. 64,511
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—65 **1 Claim**

1. A new and distinct variety of Ilex X meserveae plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of:
(a) a vigorous, densely branched upright evergreen shrub,
(b) deep green foliage of unusually large size,
(c) pistillate flowers borne abundantly in May,
(d) berries which mature to a vibrant red color, and
(e) a superior cold tolerance.

4,686
CHRYSANTHEMUM PLANT

Camilo Herrera V., and Reinaldo Saavedra, both of Bogota, Colombia, assignors to Jardines de Lose Andes Ltda., Bogota, Colombia

Filed May 11, 1979, Ser. No. 38,166
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium;* Ramat., known by the cultivar name Sofia and particularly characterized as to uniqueness by the combined characteristics of decorative capitulum type; flat capitulum form; dark lavender ray floret color; diameter across face of capitulum from 95 to 125 mm at maturity; uniform eleven week response to photoperiodic short-day control; tall plant height; and semi-upright branching pattern.

PATENTS

GRANTED APR. 7, 1981

ERRATA

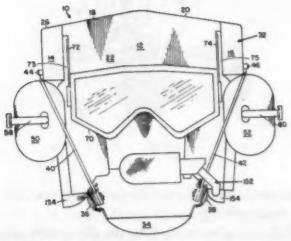
For CLASS	See PATENT NO.
434–338	4,259,788
434–366	4,259,789
434–083	4,259,790
474–082	4,259,873
474–028	4,259,874
411–417	4,259,889
411–057	4,259,890
411–003	4,260,005
369–058	4,260,161
369–033	4,260,162
369–266	4,260,163
416–096 R	4,260,336
148–126	4,260,418
208–207	4,260,479
252–411 R	4,260,484
564–300	4,260,562
264–111	4,260,582
556–453	4,260,715
526–068	4,260,722
526–115	4,260,723
526–229	4,260,724
526–279	4,260,725
369–103	4,260,858

PATENTS

GRANTED APRIL 7, 1981

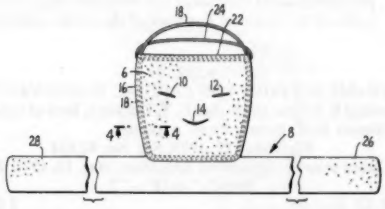
GENERAL AND MECHANICAL

4,259,747
PROTECTIVE COMMUNICATIONS HELMET
Paul F. Taesler, Bonita, and John H. Townsend, San Diego, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jun. 27, 1979, Ser. No. 52,368
Int. Cl.³ A42B *3/00*
U.S. Cl. 2—6 **46 Claims**



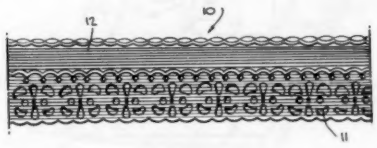
1. A protective communications helmet comprising:
a central shell having a top section, a front section and a rear section, said top section comprising first and second generally planar members being joined at the center of said helmet, said front section extending from said top section downward over the anterior of the head of the wearer, and said rear section extending from said top section downward over the posterior of the head of the wearer;
a pair of lateral electronics enclosures each being detachably secured to said central shell at a side of said central shell, each said lateral electronics enclosure having a side portion and a rear portion for protecting the sides and posterior quarters of the head of the wearer, respectively.

4,259,748
MOISTURE ABSORBENT MASK COVERING THE FACE, NECK AND EARS
Anna K. Miller, 218 Capelli Dr., Felton, Calif. 95018
Filed Apr. 24, 1980, Ser. No. 143,297
Int. Cl.³ A41D *13/00*
U.S. Cl. 2—9 **1 Claim**



1. A mask for protecting a user under a drying influence, said mask comprising in combination:
a. a face portion of an absorbent material;
b. a neck portion of a similar absorbent material;
c. a first elastic cord going around the sides and bottom of the mask adapted to be fastened over the top of a users head;
d. a second elastic cord going around the top of the mask and adapted to be placed back of the users head;
e. the bottom of said mask having a lateral elongated extension with ends whereby the ends can be brought around under the throat, back of the neck and over the ears and tucked under the sides of the mask to provide a double layer of material at the back of the neck as well as protective layers around the face and sides of the neck and over the ears.

4,259,749
FOLD-OVER LACE BAND FOR INTIMATE APPAREL GARMENTS
Herbert A. Krug, Northvale, N.J., and Gerald Gluckin, New York, N.Y., assignors to Liberty Fabrics of NY, Inc., New York, N.Y.
Filed May 25, 1979, Ser. No. 42,636
Int. Cl.³ A41D *27/08*
U.S. Cl. 2—244 **6 Claims**

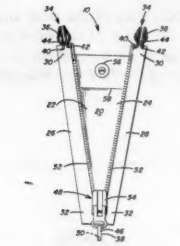


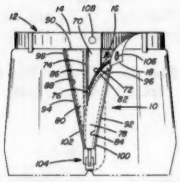
1. A fold-over edge band for garments including:
(a) a decorative edge lace portion,
(b) a relatively soft knitted portion which is substantially non-chafing and non-irritating to the human skin, and
(c) the lace and soft knitted portion being provided along the length of the edge band adjacent to each other and connected to each other by a material having a relatively low denier count.

4,259,750
TROUSER FLY
Alex J. Barna, 1216 Crawford St., Duquesne, Pa. 15110
Filed Mar. 10, 1980, Ser. No. 128,903
Int. Cl.³ A41D *1/06*
U.S. Cl. 2—234 **15 Claims**

1. An article of wearing apparel comprising,
a trouser construction including a waist portion and a first fly portion,
said first fly portion being attached to said waist portion,
means associated with said first fly portion for opening and closing said first fly portion,
a second fly portion connected to said waist portion in overlying relation with said first fly portion,
said second fly portion including a backing positioned on and substantially concealing said first fly portion when first fly portion is closed,
said backing having a pair of spaced apart, elongated edge portions extending downwardly a preselected distance from said waist portion,
fastener elements secured in overlapping relation to each of said side edge portions respectively, and
said fastener elements being spaced apart a distance increas-

ing in width from the lower ends thereof to the upper ends thereof adjacent said waist portion to present the appear-





ance of said trouser construction as having a fly portion in an open position.

4,259,751

CONSTRUCTION OF CHILDREN'S CLOTHING

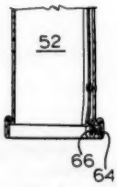
Diana Drmaj, P.O. Box 419, Brooklin, Ontario, Canada

Filed Jan. 2, 1979, Ser. No. 125

Claims priority, application Canada, Oct. 31, 1978, 315679

Int. Cl.[3] **A41D** *27/10*

U.S. Cl. 2—269 **2 Claims**



1. A method of constructing children's garment to allow them to be lengthened comprising the steps of:

cutting and sewing the garment with sufficient excess material to allow the bottoms to be turned up twice a predetermined width, said garment having a first lower edge, an inner wrong side, and an outer right side;

turning said first lower edge a first predetermined width towards the wrong side of the material to form a second lower edge;

turning up said newly formed second lower edge a second predetermined width towards the wrong side of the material to form a third lower edge;

sewing a permanent stitch through all the layers of said material along a line parallel to and adjacent to the third lower edge of said turned-up material;

stitching the top of said turned-up material to the unturned portion of the remainder of said material with an easily removable zig-zag stitch.

4,259,752

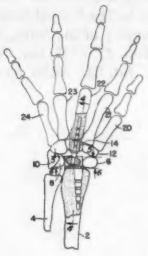
ENDOPROSTHETIC WRIST JOINT

Julio Taleisnik, 1201 W. LaVeta #501, Orange, Calif. 92668

Filed Jan. 4, 1980, Ser. No. 110,483

Int. Cl.[3] **A61F** *1/03*

U.S. Cl. 3—1.91 **3 Claims**



1. An endoprosthesis for implantation to provide an artificial wrist joint, comprising:

(a) a radial component having an elongated stem for intramedullary implantation in the radius and a distally positioned head integrally formed with the stem, the head having substantially parallel external side walls which are substantially parallel to the axis of the stem, and an internal recess defined by a concave distally facing surface which is part-cylindrical in configuration with its axis parallel to the external side walls and equidistant between them and extending transversely of the proximal-distal axis with a major part of its axial length offset laterally from the axis of the stem in the direction toward the ulna and volarly as well, and

(b) a metacarpal component having an elongated stem for intramedullary distal implantation in a distal carpal and metacarpal, and a proximal head formed integrally with the stem to be received within the internal recess of the head of the radial component, the head of the metacarpal component being generally ovoid in external configuration and having a circular exterior surface of substantially the same radius as the concave surface of the head of the radial component, and the axis of which is at right angles to the stem and which, when the components are implanted, lies in surface contact with the part-cylindrical surface of the recess in the head of the radial component, and also having a generally oval exterior surface which is positioned about the axis of the stem and engages the side walls of the recess of the head of the radial component.

4,259,753

FRAME SUPPORT FOR CARDIAC TISSUE VALVES

Domingo S. Liotta, and Holga E. T. DeLiotta, both of Calle 3 de Febrero 2025, Buenos Aires, Argentina

Filed May 29, 1979, Ser. No. 42,834

Claims priority, application Argentina, Mar. 16, 1979, 275852

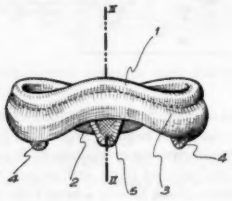
Int. Cl.[3] **A61F** *1/22*

U.S. Cl. 3—1.5 **3 Claims**

1. A frame for tissue valves to be used in cardiac surgery of the type including a substantially cylindrical, hollow body fabricated from a semi-flexible, plastic material, a medical grade fabric cover which covers said body and which defines two fully open opposite ends, one of which is intended for suture to the valvular ring of an animal valve and the other end of which is intended for suture to the remaining portions of the resected sinuses of Valsalva including the commissural areas of the aortic wall of the animal valve, and a suture ring which surrounds the body and is fabricated from a medical fabric which may be sutured to the valvular annulus of a human heart, the improvement comprising:

said frame having a proximal and a distal end, both of which

have a wavy configuration, said proximal end having a plurality of cusps corresponding to the number of commissures of the valve to be supported thereby, said cusps having a height equal to about one sixth of the maximum distance between said ends of said frame, said frame also including a plurality of short supporting arms joined to said distal end which are equidistantly spaced-apart by valleys, and which are alternately disposed relative to said cusps of said proximal end, said arms each having a total



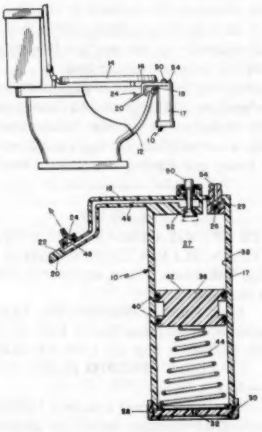
height which is about three times greater than the height of said cusps of said proximal end, and wherein said suture ring has a wavy configuration substantially conforming to the contour of said supporting arms and the valleys of said distal end and wherein said suture ring has alternately crests and valleys, on a distal edge thereof which crests, relative to the depths of said valleys thereof, have a height which is approximately no greater than half the total height of said frame.

4,259,754

PORTABLE BIDET

Jacob Bader, and Aviv Bader, both of 878 La Senda Way, Chula Vista, Calif. 92010

Filed Oct. 19, 1979, Ser. No. 86,269
Int. Cl.[3] A61H *35/00;* A47K *3/22*
U.S. Cl. 4—443 **8 Claims**



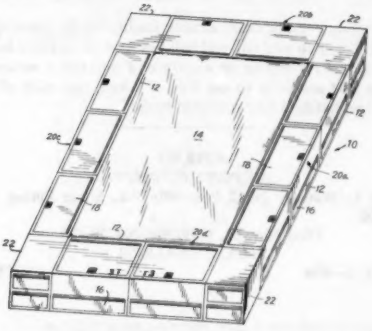
1. A portable bidet for use in conjunction with a toilet bowl comprising:
a solution reservoir to store a douche water solution;
reservoir means for maintaining pressure on the stored solution within the reservoir;
a mounting bracket extending laterally from the reservoir for mounting the reservoir adjacent to the exterior rim of said toilet bowl;
the mounting bracket having a free end extending into the interior of the toilet bowl;
a directable spray nozzle with an upward orientation located in the free end of the mounting bracket for directing the discharge of solution from the reservoir;
a discharge passage connecting the nozzle input to the interior of the solution reservoir;
means for controlling the solution discharge through the discharge passage and nozzle;
means for charging the reservoir with a solution having selectable temperature and content characteristics.

4,259,755

ARTICLE OF FURNITURE AND MODULES FOR FORMING THE SAME

George Hollander, 340 W. 22nd St., New York, N.Y. 10011

Filed Jun. 8, 1979, Ser. No. 46,762
Int. Cl.[3] A47C *7/00, 9/00*
U.S. Cl. 5—58 **9 Claims**



1. An article of furniture, namely a bed, comprising:
a plurality of interconnected cabinet modules forming an assembly of modules, each of said cabinet modules being formed by exterior wall members defining an interior storage space therewithin and means for obtaining access to said interior storage space;
means for mutually interconnecting said modules to each other to form said assembly of modules; and
said module assembly including four module sub-assemblies, each of said module sub-assemblies including at least two module sub-assemblies, each of said module sub-assemblies including at least two interconnected cabinet modules and wherein each of said module sub-assemblies is interconnected to another one of said module sub-assemblies which extends substantially perpendicularly thereto through a corner cabinet module, the latter including top, bottom, and four side surfaces, two of said side surfaces extending at right angles with respect to each other, said perpendicularly extending side surfaces being provided with means for interconnecting cabinet modules thereto, said module assembly thereby at least partially defining a frame assembly which itself defines the periphery of a substantially rectangular interior area adapted to receive a mattress therein whereby said module assembly alone or in combination with additional furniture components comprises said article of furniture.

4,259,756

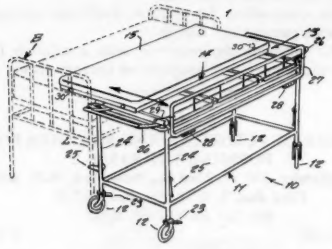
MOVEABLE TOP STRETCHER

Paul D. Pace, 347 72nd St., Brooklyn, N.Y. 11209

Filed Aug. 28, 1979, Ser. No. 70,482
Int. Cl.[3] A47B *83/04;* A61G *1/02*
U.S. Cl. 5—81 B **1 Claim**

1. A movable top stretcher assembly, comprising in combination, a mainframe and chassis frame mounted on wheels, and

a stretcher upon said chassis frame comprising a stretcher frame and a mattress thereupon, and means to slide said stretcher transversely to either side and upon a bed; said means comprising a plurality of transverse rails and a ball bearing suspension for each said rail; said suspension comprising a



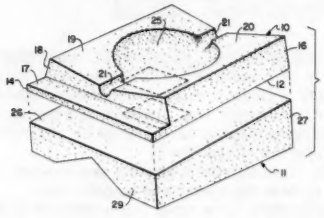
transversely circular cross section, longitudinally slitted channel for fitting on said rail, and ball bearings on an inner face of said channel for rolling on a surface of said rail; a means for lashing said assembly to the legs of a bed; and each of said wheels including a foot-operated brake.

4,259,757

SUPPORT CUSHION

Robert L. Watson, 14312 Piccadilly Rd., Silver Spring, Md. 20906

Filed Nov. 28, 1979, Ser. No. 98,180
Int. Cl.³ A47G *9/00*
U.S. Cl. 5—434 **3 Claims**



1. A support cushion, particularly for use in supporting the head and cervical regions of a medical patient, comprising

a first unitary cushion portion formed entirely of polymeric foam material and having

a rectangular, substantially planar lower surface,

means defining a generally hemispherical depression extending inwardly from the upper surface,

a generally U-shaped groove extending outwardly from said depression generally parallel with said lower surface, and

dihedral planar surfaces extending symmetrically outwardly and upwardly from said groove and depression;

a second unitary cushion portion formed entirely of polymeric foam material and having

a rectangular, substantially planar upper surface, and

a lower surface having planar side portions lying in a plane forming an acute angle with the plane containing said upper surface of said second portion and

dihedral surfaces extending symmetrically between the inner margins of said side portions and a line, thereby defining a shallow, V-shaped groove;

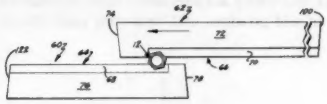
means for releasably interconnecting said lower surface of said first cushion portion and said upper surface of said second cushion portion in parallel adjacent relationship.

4,259,758

METHOD OF MAKING A SELF-TAPPING SCREW

Kenneth R. Owen, Rockford, Mich., assignor to Keeler Corporation, Grand Rapids, Mich.

Filed Oct. 11, 1978, Ser. No. 950,369
Int. Cl.³ B21H *3/02*
U.S. Cl. 10—10 R **6 Claims**



1. A method of manufacturing a rolled thread tapping screw of the type including a head, a cylindrical portion, a tapered point and a thread running continuously from said cylindrical portion onto said tapered point, comprising the steps of:

forming a screw blank having a head and a cylindrical shank of constant diameter along its entire length, said shank terminating opposite said head in an end formed with an axially and outwardly directed concavity;

continuously rolling a thread on said cylindrical shank between a pair of relatively reciprocating, complementary dies, said dies being formed with opposed faces, each of said dies having an upper straight section and a tapered section, said dies each including a plurality of thread cutting ridges formed in said upper straight section, said ridges being separated by grooves and some of said ridges extending longitudinally of said dies and into said tapered section of each of said dies, one of said dies being held stationary and the other of said dies being moved past said one die to roll the thread onto said shank portion of said blank, and said step of forming said screw blank includes the steps of:

cutting a length of wire stock, said stock having a constant diameter throughout its length;

placing the cut length of stock into a female heading die, said female heading die defining a cylindrical bore having a constant diameter throughout its length;

contacting an end of said stock within said female heading die with a knock-out pin, said pin having a tapered end in engagement with said stock; and

moving a heading punch into engagement with said stock to form a head on said stock and to cause said knock-out pin to form a concavity in the lower end of said stock whereby a screw blank having a constant diameter shank with a lower end having a concavity therein is formed.

4,259,759

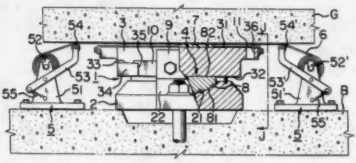
CONCRETE BRIDGE GIRDER SUPPORT STRUCTURE AND CANTILEVER ERECTION METHOD USING SAME

Hiroshi Tada, Yokohama, Japan, assignor to Oiles Industry Co. Ltd., Tokyo, Japan

Filed Feb. 15, 1979, Ser. No. 12,387
Claims priority, application Japan, Feb. 16, 1978, 53/15890; Jul. 12, 1978, 53/84083; Sep. 22, 1978, 53/130419[U]
Int. Cl.³ E01D *19/06*
U.S. Cl. 14—16.1 **19 Claims**

1. A concrete girder support structure for use in a cantilever erection method comprising an upper shoe for fixing to a girder through a sole plate fixed thereto at a predetermined position, a lower shoe fixed to a pier abutment, a movable part disposed between the upper and lower shoes, and a movable plate on the upper shoe for bridge-axial movement relative to the upper shoe, a sliding member provided between the movable plate and the upper surface of the upper shoe, a first holder device at one end of said movable plate, and, a second holder device at the side of the lower shoe, the other end of the movable plate being wound as it slides by said second holder

device, whereby the girder having the sole plate fixed thereto at a predetermined position and carried on the movable plate



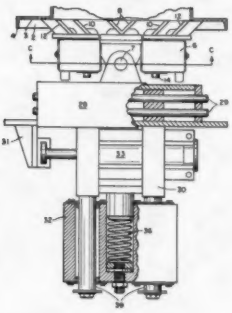
can be continuously moved together with the movable plate through the assistance of the sliding member.

4,259,760

DEVICE FOR CLEANING COKE OVEN DOORS

Edward Harris, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jul. 16, 1979, Ser. No. 57,892
Int. Cl.³ C10B *43/04*
U.S. Cl. 15—93 A **7 Claims**



1. A coke oven door scraper comprising:
(a) a cleaning head having an elongated body portion that holds a plurality of longitudinally angled chisel-like blades for contacting a coke oven door seal planar surface, said blades forming an acute angle in scraping relationship with said surface and including an end blade which pivots around a curved surface of said coke oven door seal to follow and clean said curved surface.
(b) pivotal means to allow said end blade to pivot from a linear position around said curved surface and back, and
(c) means for returning said pivotal end blade from the curved surface to a linear position.

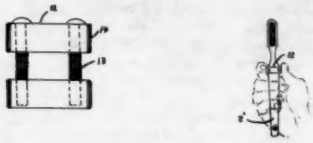
4,259,761

TOOTHBRUSH

Redmond B. Earle, 2575 W. 16th Ave., Vancouver, B.C., V6K 3B9, Canada

Filed Jun. 1, 1978, Ser. No. 911,479
Int. Cl.³ A46B *5/02*
U.S. Cl. 15—143 R **1 Claim**

1. A toothbrush comprising an elongated handle and a bristle head, said handle having a longitudinal axis, said handle having a top surface, a bottom surface, and two edge surfaces and being substantially rectangular in cross-section, said handle having a removeable gripping section comprising two directly opposed flanges, each flange lying flatly on said top and bottom surfaces, respectively, each flange being equally dimensioned and being rectangular in cross-section throughout and extending transverse to the axis of the handle, bolt means on each end of said flanges for fixing said flanges to each other and to said handle, said flanges being fixed to said handle at about one third distance from the bristle head end of the toothbrush, whereby broad gripping surfaces are provided on the sides and ends of said flanges for the forefinger and thumb of the user.

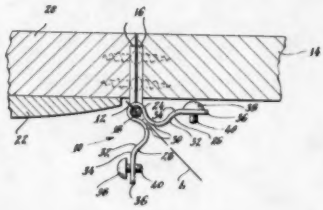


4,259,762

SHOCK-ABSORBING HINGE-PIN DOORSTOP

Gennaro Civitelli, 336 Mountain Rd., Hamden, Conn. 06514

Filed Apr. 7, 1980, Ser. No. 138,230
Int. Cl.³ E05D *13/00, 11/00*
U.S. Cl. 16—86 B **3 Claims**



1. A hinge-pin doorstop formed from a continuous length of steel and having
a loop-position adapted to encircle the hinge pin,
a first arm-portion extending generally radially from said loop-position,
a bumper-member mounted on said first-arm portion in position for engagement with the door,
a second arm-portion extending generally radially from said loop-portion into spaced relationship with respect to said first arm-portion,
a second bumper-member mounted on said second arm-portion in position for engagement with the door frame,
said arm-portions being disposed such that when the door is swung open the desired amount said arm-portions are squeezed between the door and frame resiliently stopping the door from opening farther, the resilience of said arm-portions being sufficient to absorb enough of the force exerted by the door against them to prevent damage to the surfaces of the door and frame at the points engaged by said bumper-members.

4,259,763

BILATERAL SWINGABLE SELF-CLOSING DOOR HINGE WITH COMMON BOLTING AXLE

Yun T. Hsu, No. 30-27, Chun In Rd., Chun In Village, Tong Sun Hsiang, I Lan Hsien, Taiwan

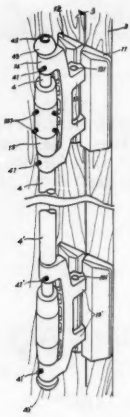
Filed Apr. 18, 1979, Ser. No. 31,878
Int. Cl.³ E05F *1/06*
U.S. Cl. 16—154 **8 Claims**

1. A door hinge arrangement comprising:
a lower hinge and an upper hinge, each adapted to be mounted between a door and a door frame and including a second hinge member and a first hinge member pivotally mounted to said second hinge member;
the second hinge member of said upper hinge being pivotable about a vertical upper axis of rotation;

the second hinge member of said lower hinge being freely pivotable, independently of said second hinge member of said upper hinge, about a vertical lower axis of rotation;

means, including an elongated member fixedly connecting said first hinge member of said upper hinge to said first hinge member of said lower hinge, for aligning the first hinge members of said upper and lower hinges, respectively, so that said lower vertical axis of rotation and said upper vertical axis of rotation are aligned along a common vertical axis of rotation; and

moving means, engaging the first and second hinge members



of one of said upper and lower hinges, for moving the second hinge member of said one of said upper and lower hinges vertically in relation to the first hinge member of said one of said upper and lower hinges by an amount corresponding to the angular displacement about said common axis of the second hinge member of said one of said upper and lower hinges relative to the first hinge member of said one of said upper and lower hinges, the second hinge member of the other of said upper and lower hinges being vertically moveable in relation to the first hinge member of said other of said upper and lower hinges.

4,259,764

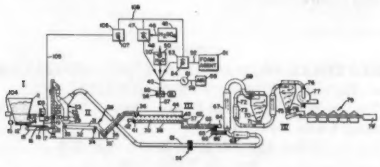
APPARATUS FOR THE FOAMED ACID DELINTING OF COTTONSEED

James D. Downing, Scott, Miss., assignor to Delinting Systems, Inc., Memphis, Tenn.

Filed Feb. 8, 1979, Ser. No. 10,488

Int. Cl.³ D01B *1/04;* F26B *19/00*

U.S. Cl. 19—41 **10 Claims**



1. Apparatus for the delinting of cottonseed comprising means for providing a continually moving mass of cottonseed to be delinted, controlled means for generating foamed sulfuric acid in operative concentration and depositing said foamed sulfuric acid in said mass of seed while agitating the seed for distributing the foam throughout the seed mass comprising means for continually supplying and admixing proportionate quantities of sulfuric acid and a foaming agent to form a mixture, a foaming device into which said mixture is introduced and converted into foam, and means for conveying the foam to discharge opening means along the moving cottonseed mass, said foaming agent being supplied in sufficient amount to convert substantially all of the mixture to foam, and said acid being present in the foam in sufficient amount for complete degradation of the linters and containing sufficient water to ensure complete wetting and saturation of the linters, and means for passing the seed through an operatively associated dryer-buffer system for lint removal.

4,259,765

BALE SUPPORTING DEVICE FOR A BALE OPENER

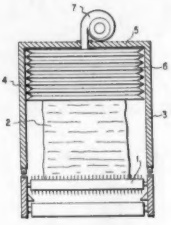
Hermann Trützschler, Mönchen-Gladbach, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Mönchen-Gladbach, Fed. Rep. of Germany

Filed Sep. 20, 1978, Ser. No. 943,976

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1977, 2745121

Int. Cl.³ D01G *7/04*

U.S. Cl. 19—80 R **11 Claims**



1. In a bale opener including guide elements for bilaterally bounding a space in which a bale to be opened is accommodated and bale opening elements for opening the bale at its underside, the improvement comprising a bale supporting device arranged above said space for engaging an upper face of the bale and for exerting thereon a continuously vertically downwardly oriented pressing force, said bale supporting device including an inflatable member disposed above said space and a blower operatively connected to said inflatable member for urging the inflatable member into engagement with the upper face of the bale.

4,259,766

CONDENSING TRUMPET

George J. Copoulos, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

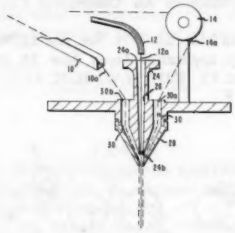
Filed Sep. 5, 1978, Ser. No. 939,493

Int. Cl.³ D01H *5/72*

U.S. Cl. 19—150 **2 Claims**

1. In a drawing frame apparatus that includes calender rolls and guide means for directing sliver to said calender rolls through a condensing trumpet located between said guide means and said calender rolls, said condensing trumpet comprising: an open ended member having an entrance at one end and an exit at its other end connected by a passage through which one sliver passes; an open ended continuous cone-shape wall surrounding said member, said wall being spaced from

said member whereby an annular passage having an entrance at one end and an exit at its other end is provided between said



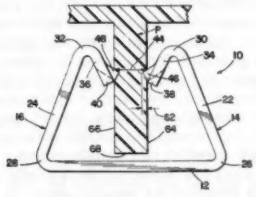
wall and said member through which another sliver passes; and a member bridging said entrance of said annular passage.

4,259,767

FASTENER

Robert J. Holton, North Caldwell, N.J., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jul. 9, 1979, Ser. No. 55,740
Int. Cl.³ F16B *2/20*
U.S. Cl. 24—73 SM **4 Claims**



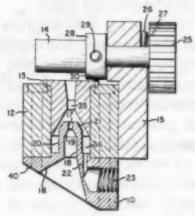
1. A one-piece, spring steel fastener for releasably retaining the edge of a plastic panel defined by a pair of generally parallel side walls and having a known thickness, said fastener retaining said panels with a predetermined resistance to removal, said fastener comprising a generally flat base section defined in part by two generally parallel first edges and a pair of substantially identical leg sections, one of said leg sections cantilevered from each first edge, each of said leg sections comprising a generally flat first leg portion extending generally upwardly one of from said first edges to a second edge, said second edges generally parallel to said first edges, and generally flat second leg portion extending inwardly and downwardly from said second edge to a third edge, said third edges generally parallel to said second edges, at least one tab sheared from each second leg portion and extending inwardly therefrom, said tabs terminating at an innermost generally straight edge generally parallel to said third edges, said third edges having a total length greater than the total length of said innermost edges of said tabs, said third edges separated by a distance generally equal to the thickness of said panel whereby they will engage said side walls with no more than a slight compressive force and said innermost edges separated by a distance less than the thickness of the panel whereby they will engage the side walls with a greater compressive force than the third edges.

4,259,768

YARN TEXTURING JET

Frank J. Clendening, Jr., and Elva L. Rose, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 30, 1980, Ser. No. 116,919
Int. Cl.³ D02G *1/16*
U.S. Cl. 28—254 **2 Claims**



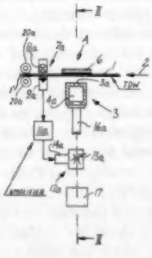
1. In a yarn texturing jet including a body having yarn inlet and outlet ends connected by a central bore, means for introducing pressurized gas through a gas inlet into said bore, a venturi located in said bore at said outlet end, a yarn guiding element extending into said bore from the yarn inlet end of the body, said yarn guiding element having a passage therethrough for guiding yarn from the yarn inlet to the venturi and a cylindrial baffle located adjacent the outlet end of the jet, said baffle being rotatable in a bracket attached to said outlet end, the improvement comprising: said yarn inlet section having successive cone-shaped and intermediate lengths leading to said passage, said intermediate length being coaxial with said passage, the axis of said cone-shaped length being at an angle to said passage; said venturi being axially slidable in said body from a preset operating position to a stringup position back to a preset operating position and being attached to a flange located outside the body at the outlet end of the body, and means attached to said rotatable baffle and engaging said flange for maintaining said venturi in said stringup position or said operating position depending on the rotational position of said baffle.

4,259,769

METHOD AND APPARATUS FOR BANDING TOWS OF FILAMENTARY MATERIAL

Heinz Greve, Hamburg, and Günter Wahle, Reinbek, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Mar. 29, 1979, Ser. No. 25,041
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1978, 2814605
Int. Cl.³ D02J *1/18*
U.S. Cl. 28—283 **10 Claims**



1. A method of banding a foraminous tow of filamentary material wherein the filaments are movable relative to each

other, comprising the steps of transporting the tow lengthwise along an elongated path; directing a plurality of discrete streams of a pressurized gaseous fluid transversely across the running tow so that each stream contacts and expands laterally a discrete strip-shaped portion of the tow; monitoring the permeability of said strip-shaped portions of the running tow; and adjusting the expanding action of the respective streams when the monitored permeability of said strip-shaped portions deviates from a predetermined value.

5. Apparatus for banding a foraminous tow of filamentary material wherein the filaments are movable relative to each other, comprising means for transporting the tow lengthwise along an elongated path; a plurality of adjustable banding devices each including means for directing at least one stream of a pressurized gaseous fluid transversely across the tow whereby the streams expand laterally the corresponding strip-shaped portions of the running tow; means for monitoring the density of said strip-shaped portions; and means for adjusting said banding devices when the density of the respective strip-shaped portions deviates from a predetermined value.

4,259,770

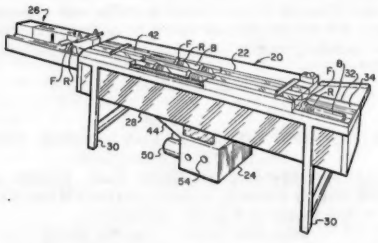
APPARATUS FOR REMOVING ROVING OR THE LIKE FROM TEXTILE BOBBINS OR THE LIKE

Robert E. Terrell, Charlotte, N.C., assignor to The Terrell Machine Company, Charlotte, N.C.

Continuation-in-part of Ser. No. 900,761, Apr. 27, 1978. This application Jun. 25, 1979, Ser. No. 52,071

Int. Cl.[3] **B65H** *73/00*

U.S. Cl. 28—294 **24 Claims**



1. An apparatus for shredding textile roving or the like into short pieces comprising a housing formed with a delivery plenum into and through which a strand of roving may be drawn by suction and a discharge plenum through and from which shredded pieces of roving may be drawn by suction, a hollow perforated delivery drum mounted for rotation in said housing between said plenums and disposed for drawing of suction through the surface thereof at said delivery plenum interiorly across said drum and outwardly through the surface thereof at said discharge plenum, means for rotating said drum to transport roving received thereon at said delivery plenum and retained thereon by suction to said discharge plenum for discharge of the roving therefrom by the suction drawn through said drum and said discharge plenum, baffle means disposed between said plenums and closely adjacent the exterior surface of said drum for confining the drawing of suction primarily through said drum while allowing roving to be transported on said drum between said drum and said baffle means, and means in said discharge plenum adjacent said drum for shredding roving delivered thereto by said drum and suction.

4,259,771

APPARATUS FOR PRODUCING HEAT TRANSFER TUBE

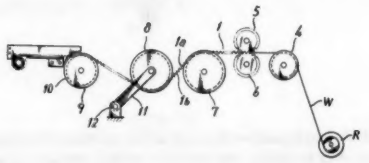
Masami Ogata, and Yuji Nakatsuka, both of Hirakata, Japan, assignors to Nishiyodo Air Conditioner Co., Ltd., Osaka, Japan

Filed Mar. 22, 1979, Ser. No. 22,796

Claims priority, application Japan, Mar. 24, 1978, 53/34392

Int. Cl.[3] **B21F** *21/00*; **B21C** *37/22*

U.S. Cl. 29—33 F **5 Claims**



1. An apparatus for producing a fin tube useful for heat transfer purposes, which comprises:

supply means for supplying a plurality of continuous wires having good thermal conductivity, said supply means comprising a rotatable rear roll having a plurality of axially spaced-apart, continuous, circumferentially extending, parallel, annular grooves in the periphery thereof for receiving and guiding said wires to form a frontwardly moving array of said wires in which said wires are positioned in side-by-side, parallel, substantially coplanar relationship;

wire fin forming means for receiving said array of said wires from said rear roll and shaping them, said wire fin forming means comprising a pair of rotatable gears positioned frontwardly of said rear roll and mounted for rotation about parallel axes which axes are also parallel with the axis of rotation of said rear roll and transverse to the lengthwise extents of said wires, said gears having interdigitated gear teeth for receiving therebetween said array of said wires and forming each of said wires into an upright, wavy shape composed of alternating arch-shaped upper portions and oppositely curved lower portions as said wires are moved frontwardly between said gears in side-by-side, parallel, substantially coplanar relationship;

a rotatable front roll positioned frontwardly of said pair of gears and mounted for rotation about an axis which is parallel with the axes of rotation of said gears, said front roll having a plurality of axially spaced-apart, continuous, circumferentially extending, parallel, annular grooves for receiving and guiding frontward movement of said array of wavy wires in side-by-side, parallel, substantially coplanar relationship with said arch-shaped upper portions being upright;

wire fin guiding means positioned frontwardly of said front roll for receiving and guiding frontward movement of said array of said wavy wires from said front roll, said wire fin guiding means comprising a plurality of upright guide plates positioned in parallel spaced-apart relationship so that the wavy wires of said array are guided between said plates with said arch-shaped upper portions remaining upright;

tube feedng means for feeding a revolving tube across the frontward end of said wire fin guiding means in a direction transverse to the direction of frontward movement of said array of said wavy wires whereby said wavy wires are helically wound around said revolving tube with said lower portions of said wavy wires being disposed adjacent said tube and the remainders of said wavy wires extending upwardly therefrom;

speed controlling means for regulating the relationship between the operating speed of said fin forming means and the operating speed of said tube feeding means so that tension is applied to said wavy wires to maintain said

wires in an upright state as said wires move from said wire fin forming means over said front roll and through said wire fin guiding means; and

welding means for affixing to said tube said lower portions of said wavy wires wound on said tube, whereby to form helical, integral, upright, wire fins on said tube.

4,259,772

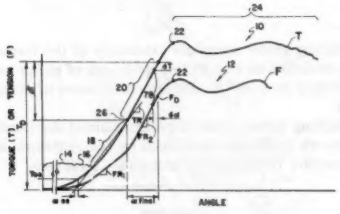
TENSION CONTROL OF FASTENERS

Siavash Eshghy, Pittsburgh, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 912,151, Jun. 2, 1978, Pat. No. 4,179,786, which is a continuation-in-part of Ser. No. 766,429, Feb. 7, 1977, Pat. No. 4,106,570, and a continuation-in-part of Ser. No. 712,554, Aug. 9, 1976, abandoned. This application Apr. 19, 1979, Ser. No. 31,343

Int. Cl.[3] **B23P** *19/06*

U.S. Cl. 29—240 **3 Claims**



1. Apparatus for monitoring the sequential tightening to the same desired predetermined stress value of a multiplicity of substantially identical joints including at least one threaded fastener, comprising

means for applying torque to the fastener for tightening the joint;

means for sensing the applied torque and the angle of threading advance;

means for terminating tightening in response to a tightening parameter selected to advance the fastener to the desired predetermined stress value;

means for determining, from the torque and angle sensings, the stress value existing in the fastener at the termination of tightening which value varies from joint to joint and which differs from the desired stress value; and

means for comparing the stress value existing in the fastener and the desired predetermined stress value.

4,259,773

TENSION CONTROL OF FASTENERS

Siavash Eshghy, Pittsburgh, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 912,151, Jun. 2, 1978, Pat. No. 4,179,786, which is a continuation-in-part of Ser. No. 766,429, Feb. 7, 1977, Pat. No. 4,106,570, and Ser. No. 712,554, Aug. 9, 1976, abandoned. This application Apr. 19, 1979, Ser. No. 31,366

Int. Cl.[3] **B23P** *19/06*

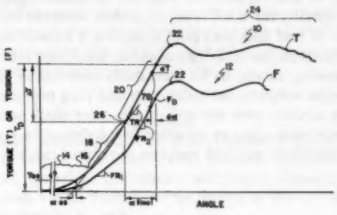
U.S. Cl. 29—240 **6 Claims**

1. Apparatus for tightening a threaded fastener, comprising

means for applying torque to the fastener;

means for terminating tightening of the fastener; and

means operative after the termination of tightening and prior to resumption of operation of the torque applying means for monitoring the fastener including means for determining the existance of significant non-linear strain in the fastener.



4,259,774

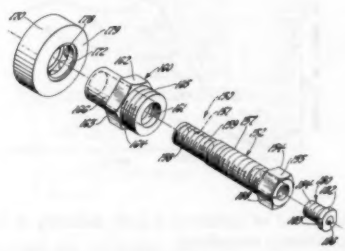
HUB INSTALLING AND REMOVING TOOL

Stanley R. Dolinski, Dayton, and Howard L. DeHart, West Milton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 26, 1979, Ser. No. 79,120

Int. Cl.[3] **B23P** *19/04*

U.S. Cl. 29—263 **2 Claims**



1. A universal tool adapted for installing and removing modes of operation for selectively installing and removing a hub on a shaft in which the hub has an inner bore portion for receiving an inner shaft portion and an outer counterbored portion for receiving an outer shaft portion and in which the outer shaft portion and outer counterbore portion are threaded, said tool comprising a support member, a reversible member, a bearing and a plug; said support member including a head having driving surfaces formed thereon and an uninterrupted helical threaded shank, said shank thread including a crested helical thread portion extending from said head to a predetermined location intermediate said head and the free end of said shank, said shank thread having a truncated helical thread portion extending from said predetermined intermediate location to said shank free end and having a predetermined diameter sufficiently small for telescopic interference-free insertion into both bore portions of said hub, said support member's shank having an axial threaded blind bore in the free end thereof, said reversible member provided with a threaded axial bore extending therethrough, said reversible member including an integral drive and bearing support portion intermediate its ends, said reversible member having an externally threaded removal portion on one end thereof and an installing guide portion on the other end thereof, said bearing adapted, when said tool is used in its installing mode of operation to be carried on the guide portion of said reversible member against the bearing support portion thereof in a manner allowing said guide portion to be telescopically received sufficiently within the bore portion of the hub to align the support portion of the tool for threaded engagement by said shank's blind bore with

the threaded portion of the shaft, said externally threaded removal portion adapted, when said tool is used in its removing mode of operation, with said reversible member reversed end-for-end on said support member, for threaded engagement by said externally threaded removal portion with the counterbore portion of said hub; said plug including a locator on one end and threads on the other end adapted, when said tool is used in its removing mode, to be threadably inserted in said shank blind bore, whereby the locator on said plug provides a thrust bearing contact with the end of the outer shaft portion such that upon said support member being driven in a predetermined direction said tool operates to remove the hub from the shaft.

4,259,775

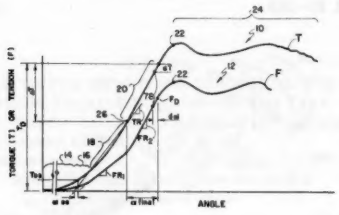
TENSION CONTROL OF FASTENERS

Siavash Eshghy, Pittsburgh, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 912,151, Jun. 2, 1978, Pat. No. 4,179,786, which is a continuation-in-part of Ser. No. 766,479, Feb. 7, 1977, Pat. No. 4,106,570, which is a continuation-in-part of Ser. No. 712,554, Aug. 9, 1976, abandoned. This application Apr. 19, 1979, Ser. No. 31,345

Int. Cl.[3] B23P *19/06*

U.S. Cl. 29—407 **8 Claims**



1. A method of tightening a joint including at least one threaded fastener comprising;

applying torque to and threadably advancing the fastener;

sensing the applied torque and the angle of rotation;

normally terminating threadable advance of the fastener in response to a final tightening parameter selected from the group consisting of a torque value variable from one fastener to the next, a predetermined fixed angle value and an angle value variable from one fastener to the next;

conducting a quality control procedure adjacent the final tightening parameter and producing a signal representative of a failed condition of the joint;

reapplying torque to and further threadably advancing the fastener in response to the quality control signal; and

finally terminating threadable advance of the fastener in response to a function of the predetermined fixed torque value.

4,259,776

METHOD OF ASSEMBLY OF AIRSHIP HULL

John W. Roda, Santa Monica, Calif., assignor to Airships International Inc., Tustin, Calif.

Filed Aug. 9, 1978, Ser. No. 932,286

Int. Cl.[2] B23Q *3/02;* **B23P** *11/00*

U.S. Cl. 29—423 **10 Claims**

1. A method of assembling a hollow rigid metal-clad elongated airship hull comprising the steps of:

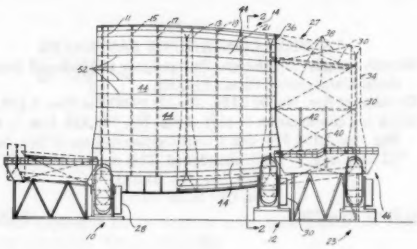
(1) preassembling at least two principal frame members in a ring configuration

(2) placing each frame member in a vertical orientation on an endless belt rotating cradle having a plurality of adjustable cushions externally affixed thereto, the plane of the frame member being oriented transversely of the hull axis, each cradle being arranged to rotate each frame in said plane;

(3) intermittently rotating each cradle and the frame members to bring a desired location of the hull to a work station

(4) connecting the frame members by means of a temporary structure

(5) attaching smaller frame elements to the temporary structure to form secondary circular frame members



(6) securing girder members externally of the frame members to define an intersecting gridwork of girder members and frame members having spaces between adjacent members

(7) attaching metal plates of predetermined thickness to the gridwork in the spaces defined by the gridwork; and

(8) thereafter removing the temporary structure.

4,259,777

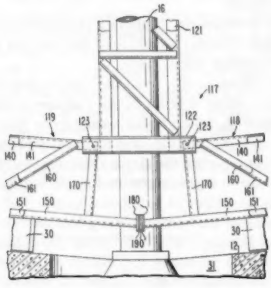
ROTARY RAKE STRUCTURE FOR A SETTLING TANK

Donald L. King, Bountiful, and Gerald S. Glanville, Salt Lake City, both of Utah, assignors to Envirotech Corporation, Menlo Park, Calif.

Division of Ser. No. 30,673, Apr. 16, 1979. This application May 12, 1980, Ser. No. 148,626

Int. Cl.[3] B23P *19/00*

U.S. Cl. 29—526 R **6 Claims**



1. A method of installing a pair of rake arms on a torque transmitting member for use in a settling tank, said torque transmitting member being mounted for rotary motion about a vertical axis, each of said rake arms comprising an upper chord and a lower chord, the upper and lower chords of each rake arm being rigidly positioned with respect to each other, the method comprising the steps of sequentially:

(a) securing the upper chord of each rake arm to said torque transmitting member in such a way as to permit pivotal motion of both rake arms in a plane, said plane containing the vertical axis of said torque transmitting member,

(b) pivotally moving each rake arm individually in said plane to a position at which the lower chord of each rake arm

assumes a desired orientation with respect to the bottom of said tank, and

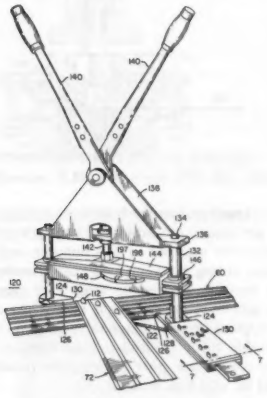
(c) interposing shim means between the lower chords of said rake arms in order to maintain the lower chord of each rake arm in said desired orientation.

4,259,778

PUNCH AND CRIMP APPARATUS

William S. Greenwood, Nutley, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed May 25, 1979, Ser. No. 42,534
Int. Cl.³ B26F *1/04*; H01R *9/07*
U.S. Cl. 29—560 **27 Claims**



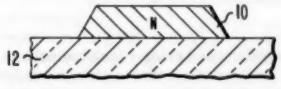
1. A tool for selectively applying at least three connectors to two or more multiconductor cables to selectively interconnect individual conductors of each of such multiconductor cables comprising: a base member atop which the multiconductor cables are placed; punch means arranged to be driven towards and away from said base member; drive means coupled to said punch means to selectively drive said punch means towards and away from said base member; a plurality of punch assemblies comprising an equal plurality of punches positioned intermediate said base member and said punch means to be selectively operated to punch apertures in the multiconductor cables placed on said base member and crimping means to simultaneously crimp all connectors positioned in said apertures after the completion of said punch operation.

4,259,779

METHOD OF MAKING RADIATION RESISTANT MOS TRANSISTOR

Alfred C. Ipri, Princeton, and Doris W. Flatley, Belle Mead, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 24, 1977, Ser. No. 827,373
Int. Cl.³ B01J *17/00*
U.S. Cl. 29—571 **8 Claims**



1. In a method of making an improved radiation tolerant MOS transistor which includes the steps of:

(a) providing a channel oxide layer on a body of semiconductor material,

(b) providing a gate on the channel oxide,

(c) embedding a dopant in the semiconductor body on each side of the gate to form the source and drain regions, and

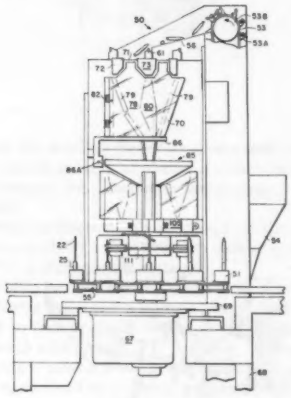
(d) providing electrodes on the source and drain regions, the improvement comprising carrying out step (a) at a temperature no greater than 1000° C. and steps (b), (c), and (d) at a temperature no greater than 900° C.

4,259,780

PARTS ASSEMBLER FOR BALLPOINT PENS

Lynn D. Crawford, San Jose, Calif., assignor to Genevieve I. Hanscom; Genevieve I. Hanscom and Lois J. Thomson, both of San Jose, Calif., Trustees of the Estate of Roy M. Magnuson, part interest to each

Filed Apr. 9, 1979, Ser. No. 28,000
Int. Cl.³ B23P *21/00*
U.S. Cl. 29—808 **6 Claims**



1. Apparatus for assembling a ballpoint pen by placing a barrel assembly onto a cap assembly with inserted refill assembly and spring, wherein said barrel assembly has a larger diameter threaded end and a smaller diameter tip end, said apparatus comprising in combination:

means for receiving and transporting single-file along a predetermined path the cap assemblies with the open end extending vertically upward and the refill assembly and spring inserted therein to extend vertically upward and thereby form a cap, refill and spring assembly;

means for receiving a plurality of barrel assemblies;

means for transporting the barrel assemblies in single-file order;

means for aligning the barrel assemblies with the larger diameter threaded end extending vertically downward including a vertical passage including restrictions at each end only permitting passage of the smaller diameter tip end and means for dropping the barrel assemblies in a horizontal attitude into the vertical passage such that the smaller diameter tip will pass through the restriction and the larger diameter threaded end will be momentarily detained; and

means for moving an aligned barrel assembly over the predetermined path and into alignment above a cap, refill and spring assembly including a rotating carrousel assembly positioned over the predetermined path of the cap, refill and spring assembly receiving and transporting means and having vertical pockets to hold each barrel assembly and wherein the bottom of said carrousel vertical pockets are formed by a stationary plate having a trailing edge which the barrel assembly moves across to be dropped onto the cap, refill and spring assembly thereby allowing the barrel assembly with the larger diameter threaded end extending

vertically downwardly to drop downward over the cap, refill and spring assembly.

4,259,781

SHAVING APPARATUS

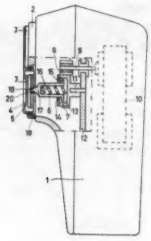
Ebbe Boiten; Gerrit J. Groothuis, and Jochem J. de Vries, all of Drachten, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

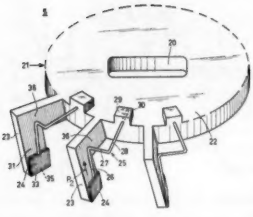
Filed Mar. 5, 1979, Ser. No. 17,768

Claims priority, application Netherlands, Mar. 15, 1978, 7802795

Int. Cl.³ B26B *19/14*

U.S. Cl. 30—43.6 **7 Claims**





1. A shaving apparatus having a circular shear plate provided with hair-entry apertures and a cutting unit associated with and rotatable relative to the shear plate; said cutting unit comprising a cutting member having a circular central body, cutters extending from the circumference of said central body toward the shear plate, lead cutters respectively associated with and movable relative to the cutters away from and toward the shear plate, resilient connecting arms respectively securing the lead cutters to the central body of the cutting member, the inner end portion of each connecting arm extending substantially radially with respect to the rotational axis of the cutting unit and undergoing torsion-loading as a result of movement of its associated lead cutter away from the shear plate, said associated lead cutter being connected eccentrically to said inner end portion, and means for elastically opposing the torsion-loading on the inner end portion of each connecting arm.

4,259,782

FLAIL FEEDOUT MECHANISM FOR A ROTARY MOWER

Raymond E. Proulx, 5837 Cameo St., Alta Loma, Calif. 91701

Filed Sep. 14, 1979, Ser. No. 75,691

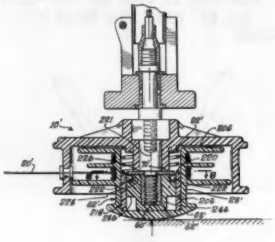
Int. Cl.³ A01D *50/00*

U.S. Cl. 30—276 **11 Claims**

1. In a mower having a least one cutting flail which extends outwardly from a spinning assembly including two major assemblies, a cap assembly and a spool assembly having an axis of rotation, a bumper for engagement with the ground and means to allow predetermined lengths of flail to feed outwardly in response to the striking of the bumper on the ground, the improvement comprising:

a cam member having a cam slot therein connected to one of said assemblies;

a follower member connected to the other of said assemblies and having at least one cam follower thereon positioned to ride in said cam slot, and at least one outwardly extending knob, said spool assembly surrounding said follower member and having at least one groove parallel to said axis of said spool assembly, said groove having parallel side



walls, a lower end and at least one lateral cutout, said knob being positioned in said lateral cutout to releasably retain said follower member to said bumper; and

bias means acting between said cam member and said follower member tending to urge said cam follower into stable positions on said cam slot when undisturbed by force applied to said bumper and adapted to be overcome by suitable force applied to said bumper, said cam slot having at least one portion generally parallel to the force applied by said bias means.

4,259,783

BAR JOINTING

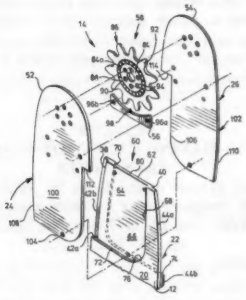
Dennis G. Scott-Jackson, and Hui C. Lim, both of Burnaby, Canada, assignors to Windsor Machine Company Limited, Langley, Canada

Filed Oct. 2, 1979, Ser. No. 81,110

Claims priority, application Canada, Aug. 31, 1979, 334920

Int. Cl.³ B27B *17/00*

U.S. Cl. 30—384 **45 Claims**



1. In a segmented bar having a longitudinal axis, a first bar section slidably interengageable with a second bar section under longitudinal axial displacement to move into and out of end to end abutting interlocking mating relation, each of said bar sections presenting corresponding longitudinally extending mating surface formations on opposite sides and corresponding longitudinally extending mating edge formations along opposite edges, each bar section terminating in an abutting end edge formation to be presented to the abutting end edge formation

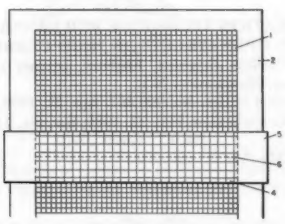
of the other of said bar sections when disposed in interlocking mating relation, the opposed surface formations of one of said sections each including a locating recess therein and offset in relation to each other and each bounded by a portion of the extent of its adjacent abutting end edge formation, the opposed surface formations of the other of said sections each including a mating projection for each of said locating recesses and likewise offset in relation to each other and each bounded by a portion of the extent of its adjacent abutting end edge formation, said opposed locating recesses and projections being slidably interengageable in at least one longitudinal axial orientation thereof for longitudinal displacement of said bar sections into and out of end to end abutting interlocking mating relation.

4,259,784

MAGNIFIED GRAPHICAL COPIER

Ruth B. MacPherson, R.D. 1 Caswell Hill Rd., Belfast, Me. 04915

Filed Jun. 27, 1977, Ser. No. 810,640
Int. Cl.[2] D06Q *1/00*; B43L *13/00*
U.S. Cl. 33—1 K **3 Claims**



1. A magnifying graphical copier for copying and rendering designs in needlepoint on a needlepoint canvas having symmetrical stitch holes defining a selected needlepoint canvas mesh size comprising:

a rectangular four-sided frame, at least two opposite sides thereof having raised outer edges with grooves formed along the outer edges, said parallel grooves comprising a track for sliding engagement, said rectangular frame also formed and adapted to receive and support a grid within the sides of the frame and near the bottom of the frame whereby a grid is supported close to the design to be rendered in needlepoint for accurate reproduction;

a rectangular grid mounted within the sides of said frame near the bottom of the frame, said grid having a selected mesh size related to the needlepoint mesh whereby the design may be enlarged, reduced, transposed equally or distorted in the needlepoint rendering according to whether the grid mesh size is smaller than, larger than, equal to or of different rectangular proportions from the needlepoint mesh;

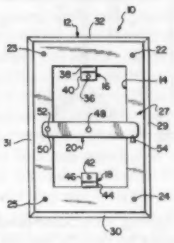
and an elongate rectangular magnifying lens formed with downwardly extending hook means at each end for sliding engagement with the track of parallel grooves at the outer edges of the frame, said lens and extending hooks forming a bridge across the frame, supporting the lens over the grid in spaced relationship for magnification, said elongate lens extending across the frame the width of the grid for magnified reading over the entire length and width of the visible grid as the lens slides along the frame.

4,259,785

MARKING TEMPLATE FOR WALL COVERINGS

Robert F. Wortham, 422 E. Highland Ave., Sierra Madre, Calif. 91024

Filed Jul. 17, 1979, Ser. No. 58,173
Int. Cl.[3] G01B *3/00*; B26F *1/24*
U.S. Cl. 33—189 **10 Claims**



1. A device for marking the location on a wall covering of either an electrical outlet or an electrical switch located in the wall to be covered, the combination comprising:

a base plate;

four marking members rigidly supported on said base plate in an array defining a rectangle with each of said members located in a corner of the rectangle;

means defining an aperture in the center of said base plate;

means defining a top and a bottom bore in said base plate adapted to receive the mounting screws of an electrical wall switch trim plate;

a bar having a central bore therein adapted to receive the mounting screw of an electrical wall outlet trim plate; and

means for supporting said bar in a first position spanning the center of said aperture and a second position spaced from the center of said aperture.

4,259,786

Patent Not Issued For This Number

4,259,787

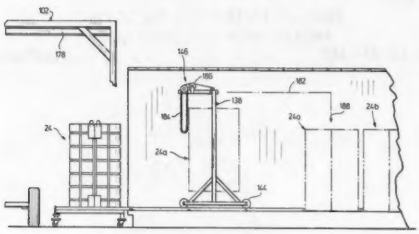
HINGED CONTAINER FOR BULK CURE OF TOBACCO

Ronald H. Minshall, and Gary E. Balthes, both c/o Douglas S. Johnson, 133 Richmond St. West, Toronto, Ontario, Canada

Filed May 7, 1979, Ser. No. 36,563
Int. Cl.[3] F26B *19/00*
U.S. Cl. 34—201 **30 Claims**

9. An apparatus for use with a bulk cure tobacco kiln having at least two spaced-apart rails extending from kiln entrance to its back, such rails overlying a kiln perforated flooring, said apparatus comprising a movable frame supporting a pair of parallel spaced-apart rails adapted to be interconnectable with any pair of such kiln rails, a gantry crane having wheels associated with its depending legs for rolling engagement with said

rails on said frame, said gantry crane being adapted to raise a bulk loaded tobacco container from said mobile frame, transport it into a kiln having such corresponding rails and lower such carried container to rest its bottom onto a desired kiln floor location between said rails.

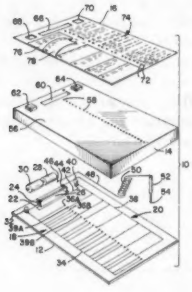


4,259,788

TESTING APPARATUS

Robert F. Wilson, 30W475 Fairway Dr., Naperville, Ill. 60540

Filed May 16, 1979, Ser. No. 39,738
Int. Cl.[3] G09B 7/06
U.S. Cl. 434—338 **4 Claims**



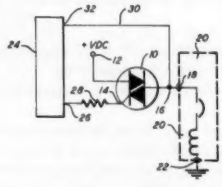
1. A test apparatus comprising, in combination, a test board assembly and an information display sheet, said test board assembly comprising an energy source having first and second source terminals, and a correct answer electrical circuit having one terminal thereof connected to said first source terminal, a first conductor element extending along one side of said board assembly and answer indicator means in series circuit relation between said one terminal and said first conductor, said conductor having a plurality of individual contact terminals in parallel with each other and arranged physically so as to lie along a given locus in spaced apart relation, an incorrect answer electrical circuit having one terminal thereof also connected to said first source terminal, a second conductor element extending along another side of said board assembly and answer indicator means in series circuit relation between said first source terminal and said second conductor, said conductor also having a plurality of individual contact terminals in parallel circuit relation to each other and arranged to lie along said given locus interspersed with said contact terminals in said correct answer circuit, said given locus extending generally centrally of said board assembly with said individual contact terminals comprising conductive strips extending respectively to either side of said board for connection with said first and second conductor elements, respectively, and a circuit completing assembly with one portion thereof connected to said second source terminal, said circuit completing assembly also including a single manually positionable answer selector unit having a conductive end portion, a board cover unit having a plurality of apertures, each being in a position of registration with an associated answer circuit terminal, whereby inserting said conductive end portion of said answer selector through one of said apertures and into contact with one of said answer circuit terminals will complete one of said correct and incorrect answer circuits and energize said answer indicator means, said information display sheet containing visually perceptible information on said display sheet in multiple answer format, and a plurality of apertures corresponding to and in registry with at least some of said board cover apertures, each sheet aperture being associated with a corresponding answer, with said correct and incorrect answer circuits and said information being constructed and arranged so that upon insertion of said answer selector into a given aperture, said answer indicator means will be energized so as to indicate whether the selected answer is correct or incorrect.

4,259,789

SIMULATION TECHNIQUE FOR GENERATING A SUDDEN OPEN CIRCUIT ON HIGH CURRENT LINES

John H. Mallett, Brighton, England, assignor to The Singer Company, Binghamton, N.Y.

Continuation of Ser. No. 900,467, Apr. 27, 1978, abandoned.
This application Feb. 22, 1980, Ser. No. 123,631
Int. Cl.[3] G09B 25/02
U.S. Cl. 434—366 **2 Claims**



1. In a simulator having instruments, devices and electrical leads which can be affected adversely by spurious electric currents induced electro-magnetically, apparatus for generating a localized electrical overload current to simulate a circuit-breaker-protected electrical network malfunction by applying a localized overload current simulative of an overload of the network directly to a simulator circuit breaker, comprising:

circuit breaker means in a simulator for providing an open circuit in response to said localized overload current,

electrical gate means, normally non-conductive, electrically connected to and physically adjacent said circuit breaker means, capable of conducting said localized overload current in response to a predetermined control trigger pulse, and capable of sustaining said localized overload current flow after the removal of said control trigger pulse,

overload current source means connected to said electrical gate means for providing an electrical current of a magni-

tude comparable to the current generated in an actual electrical network malfunction, and

control means positioned remotely from said electrical gate means and responsive to a predetermined event for providing said control trigger pulse,

whereby when said control trigger pulse is applied to said electrical gate means in response to said predetermined event, said localized overload current will flow from said overload current source means to said circuit breaker means and will continue to flow after said control trigger pulse is removed until said localized overload current is interrupted by the opening of said circuit breaker means, which interruption causes said electrical gate means to reset itself to said non-conducting state.

4,259,790

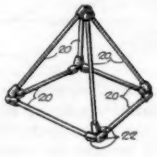
SELF-ADHERING STICKS, PLATES AND OTHER EDUCATIONAL DEVICES FOR CONSTRUCTING LETTERS, FIGURES, DESIGNS AND THE LIKE

Bernard Borisof, 3920 N. Lake Shore Dr., Chicago, Ill. 60613

Division of Ser. No. 605,239, Aug. 18, 1975, abandoned. This application Mar. 4, 1977, Ser. No. 774,707

Int. Cl.[3] A63H *33/14*

U.S. Cl. 434—83 **8 Claims**



1. An educational device,

comprising an elongated stick having two end portions, and a pair of knobs of malleable moldable pressure sensitive adhesive material on the respective end portions of said stick,

said adhesive material being microcrystalline wax with mineral oil in the proportion of 2 to 12% mixed with said microcrystalline wax to provide greater tackiness,

said microcrystalline wax being of a flexible type with a melting point between 150° and 180° F. and a needle penetration between 20 and 50 when measured at 77° F. in accordance with ASTM Standard No. D1321.

4,259,791

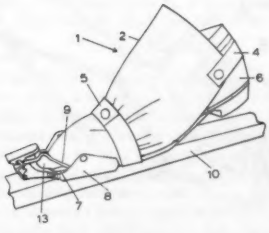
SKIER'S TOE AND FOOT INSULATOR

Anthony C. Bazan, 247-A Fleming Rd., Charleston, S.C. 29412

Filed Mar. 4, 1980, Ser. No. 127,185

Int. Cl.[3] A43B *3/18, 5/04*

U.S. Cl. 36—7.2 **6 Claims**



1. An article (an insulator) adapted for detachably mounting atop a cross-country (Nordic) ski boot for providing additional insulation for the skier's toes and foot, comprising an insulation containing envelope dimensioned for fitting over and covering the portion of said ski boot forward of the skier's leg, made of two components of durable fabric, the lower of said components to be in contact with the boot upper and having the same shape of the foward portion thereof, but having a tongue section extending forward beyond the welt line at the toe end of said boot upper; the upper of said components being dimensioned wider relative to said lower component to accommodate said insulation between said components, and also having a tongue section superimposable with said tongue section of said lower component; means permanently attaching said components together at front and lateral edges to form said envelope, and along a line separating said tongue section from the remainder of said envelope; appropriate insulation dimensioned for inclusion in said envelope; and first strap means attached to said upper component to be approximately above the ball of the skier's foot and adapted to hold said insulator securely in place and in contact with said boot upper through encircling said insulator and said forward part of said ski boot; second strap means with ends attached near opposite rear corners of said envelope and adapted to fit around the heel of said ski boot to hold said insulator in position.

4,259,792

ARTICLE OF OUTER FOOTWEAR

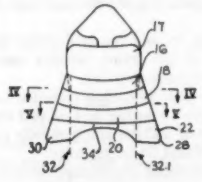
Johan P. Halberstadt, 25 Arterial Rd. West, Bedfordview, Johannesburg, Transvaal Province, South Africa

Filed Jul. 27, 1979, Ser. No. 61,427

Claims priority, application South Africa, Aug. 15, 1978, 78/4637

Int. Cl.[3] A43B *13/18, 13/04, 13/12, 5/06*

U.S. Cl. 36—28 **3 Claims**

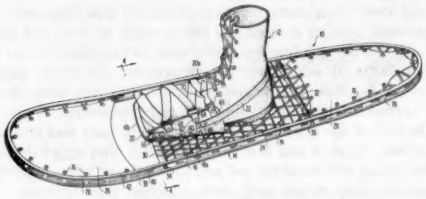


1. An article of outer footwear comprising a footwear upper attached to a footwear base, said footwear base including a sole part and a heel part, said heel part having an upper surface on which the weight of a person's foot will press and a lower surface adapted to contact the ground, the area of the lower surface being greater than the area of the upper surface, said lower surface extending outside vertical planes passing through the upper surface at the periphery of the upper surface on both sides of the heel and behind the heel; a peripheral ridge extending upwardly from the upper surface on which the weight of the person's foot will press, said peripheral ridge being positioned to form along its inside surface an upwardly extending support for the sides and back of the person's heel, said peripheral ridge having its outer surface flaring outwardly on both sides of the heel part and behind the heel part from the top of the ridge to the lower surface of the heel part, said ridge also being attached on its inner surface to the footwear upper; and a central longitudinal groove in the underside of the heel part extending forwardly through the heel part into the underside of the sole part to divide the lower surface of the heel part into a pair of fins which are capable of bending outwardly and upwardly when the underside of the heel part strikes the ground.

4,259,793
LIGHT WEIGHT, HIGH TRACTION SNOW SHOE

C. Baird Morgan, Jr., Pittsford, Vt.; Fred H. Alexy, Cleverdale, and Robert E. Geh, Putnam Station, both of N.Y., assignors to Vermont Tubbs, Inc., Forestdale, Vt. and AMG Industries, Inc., Glen Falls, N.Y.

Filed Aug. 15, 1979, Ser. No. 66,716
Int. Cl.[3] A43B 5/04
U.S. Cl. 36—125 8 Claims



1. An improved, light weight, high traction snow shoe comprising:

a unitary, light weight I-beam frame member of generally oval plan configuration, defining a horizontally flat middle and rear portion and terminating at its forward end in an upwardly inclined tip, said I-beam frame member comprising a base defining relatively sharp edges on opposite sides of the bottom face thereof, a riser extending vertically with respect to said base and terminating at its upper end in an integral transverse rim having a convex upper surface and curved opposed edges to prevent abrasion by said rim in contacting elements laterally thereto while said bottom face edge insures high traction with the snow field during use due to the sharp edges thereof,

at least one spreader bar fixedly mounted to said frame member and extending transversely between opposed lateral sides thereof at the forward end of the flat central section,

webbing carried by said frame member between opposed lateral sides of said frame member and extending rearwardly of said transverse bar,

a flat swivel toe plate pivotably mounted on said transverse bar for rotation about the axis of said bar and extending across the top of said bar and generally coplanar with the upper edge of said frame member,

a flexible strip material toe binding fixedly mounted to the top of said toe plate and having lateral portions extending to each side thereof, and

at least one strap fixed at one end to one side of said toe binding, and

means for effecting lacing of said strap across opposite lateral edges of said toe binding to clamp said binding to an inserted boot toe of the snow shoe wearer's boot, such that during traverse of the snow field, the wearer pivots the boot toe about the axis of said transverse bar on said swivel toe plate.

4,259,794
SNOWPLOW

Albert Rath, Kitchener, Canada, assignor to C.E.P. Industries Ltd., Toronto, Canada

Filed Aug. 30, 1979, Ser. No. 71,366
Int. Cl.[3] E01H 5/04
U.S. Cl. 37—42 VL 10 Claims

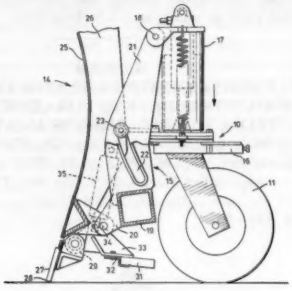
1. A snowplow mechanism comprising, in combination:

a support frame;

a forwardly mounted blade structure articulately connected to the support frame for movement between first and second working positions;

said blade structure comprising a main blade portion having a horizontal scraping edge and an auxiliary scraping blade of elastomeric material pivotally connected to the main blade portion for movement about a horizontal pivotal axis between an operative position, in which it is juxtaposed with said horizontal scraping edge in cooperative alignment with the main blade portion, and an inoperative position;

first power means mounted on the support frame and connected to the main blade portion for moving the blade structure between said first working position, in which the horizontal scraping edge is in ground engaging relation, and said second working position in which the horizontal scraping edge is raised; and

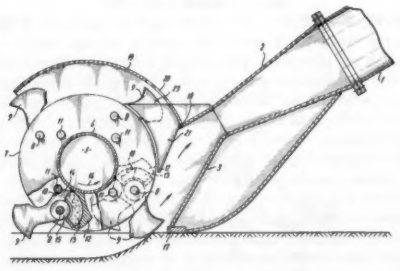


second power means connected between said main blade portion and said auxiliary scraping blade, said second power means being operable when the blade structure is in the second working position for moving the auxiliary blade between its operative and inoperative positions, said first power means including a first pair of hydraulic cylinders for raising and lowering the blade structure and a second pair of hydraulic cylinders for tilting the blade structure about a horizontal axis between first and second limit positions which are angularly offset with respect to one another.

4,259,795
DRAGGING TYPE CUTTER HEAD FOR A SUCTION DREDGER

Pieter Verboom, Alblasserdam, Netherlands, assignor to IHC Holland N.V., Rotterdam, Netherlands

Filed Jun. 19, 1979, Ser. No. 49,656
Claims priority, application Netherlands, Jul. 18, 1978, 7807683
Int. Cl.[3] E02F 3/88
U.S. Cl. 37—66 7 Claims



1. In a dragging type cutter head for a suction dredger, comprising a suction conduit having an inlet having upper and lower edges and a substantially cylindrical cutting member comprising a cylindrical body rotatable about a horizontal axis,

said body having at its periphery a series of cutting teeth disposed side-by-side in a direction parallel to the axis of the cutting member; the improvement in which only one cutting member is provided, said cutting member rotating in such a direction that the cutting teeth at the lowermost points in their rotation move in the dragging direction, the edges of the inlet opening extending to the outer circle of rotation of the teeth with the lower edge of said opening at the same level as the lower part of the cutting member, means mounting the cutting teeth for pivotal movement around horizontal axes parallel to but spaced from the axis of rotation of the cutting member, and spring means urging the teeth about their axes in the cutting direction.

4,259,796

PRESS TABLE

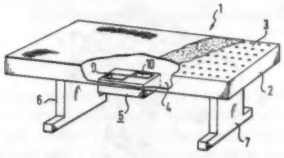
Jutta Riba nee Hildebrand, Rosenbergstr. 26, 5455 Hardert, and Hans Rother, Hochstr. 92, 5450 Neuwied 23, both of Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 960,066

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1977, 2751283

Int. Cl.³ D06F *71/34, 81/00*

U.S. Cl. 38—15 **18 Claims**



1. A blower and suction unit for steam press tables comprising connecting means for connecting said unit with said press table, said press table having an upper pressing surface and a lower surface spaced from said upper pressing surface and comprising a hollow casing connected with a suction chamber which is further connected with the suction side of a blower comprised in said unit, said casing being further connected with a blowing chamber which is further connected with the pressure side of said blower, and wherein the suction chamber and blower chamber are connected to the hollow chamber through a common opening, changeover means for changing over said unit from blowing to suction and vice-versa and means to at least substantially prevent communication between either said hollow casing and said suction side or between said hollow casing and said pressure side of said blower.

4,259,797

TOP ACCESS PRINTING BADGE HOLDER WITH PRINTING CARD GUIDES

Dana C. Belser, 3909 Blackthorn St., Chevy Chase, Md. 20015

Filed Oct. 26, 1979, Ser. No. 88,669

Int. Cl.³ A44C *15/00*

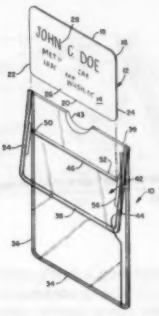
U.S. Cl. 40—1.5 **3 Claims**

1. In a transparent convention badge holder of the type having a front panel, a rear panel, peripheral seals joining said panels together along at least two edges thereof, a fold line along an intermediate transverse seal forming an elongated compartment and a shorter exposed pocket, the elongated compartment being adapted to be disposed in the pocket of the wearer with the fold line positioned on the pocket top edge, and the exposed pocket being suspended over said last named edge, a relatively rigid printing card removably mounted in said exposed pocket, the improvements comprising:

the panels of the elongated compartment having side edges and one of said side edges of the front panels being spaced inwardly from the adjacent side edge of the rear panel, and being open to provide access to the elongated compartment;

the panels of the exposed pocket having side and end edges and being connected at all of said edges;

the rear panel of the exposed pocket having a horizontal slit formed therein with slit terminal ends, said slit located intermediate said fold line and said end edge;



a pair of vertical guide seals joining the front and rear panels of the exposed pocket and located exteriorly of the terminal ends of the slit; and

the card being inserted between the panels through said slit and being guided by the guide seals which serve to correctly position said card within said exposed pocket.

4,259,798

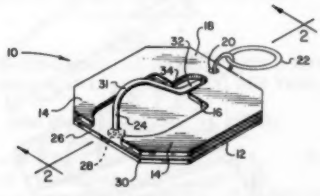
PET TAG HOLDER

Paula M. McConnell, 5936 Bryan Pkwy., Dallas, Tex. 75206

Filed Jun. 28, 1979, Ser. No. 53,048

Int. Cl.³ G09F *3/18*

U.S. Cl. 40—10 R **8 Claims**



1. A pet tag holder for supporting a pet tag from a pet collar and reducing rattling comprising:

a generally flat plate having means near a first edge for connection to a pet collar,

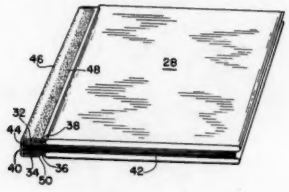
a post supported on a first surface of said plate near a second edge for engaging a hole in a pet tag,

first and second spring arms each having first ends bonded to said first surface of said plate and second ends positioned on opposite sides of said post near said second edge for engaging a pet tag supported on said port and urging it against said first surface.

4,259,799
COMBINATION PACKAGE COMPRISING A LOOSE LEAF BOOK, A PLURALITY OF TRANSPARENT PLASTIC FRAMES, AND MEANS FOR HANGING THE SAME

Robert E. Fulton, Jr., Newtown, Conn. 06470

Filed May 16, 1979, Ser. No. 39,336
Int. Cl.[3] G09F *1/12*
U.S. Cl. 40—159 17 Claims



1. A package comprising a book containing a plurality of loose leaves, said book having cover means,

means clamping the cover means with the loose leaves retained between the book covers, said clamp being inherently resilient and holding the book covers and leaves solely by the resilience thereof,

a set of frames for said leaves, each frame being of transparent plastic and adapted to enclose a selected leaf for mounted display,

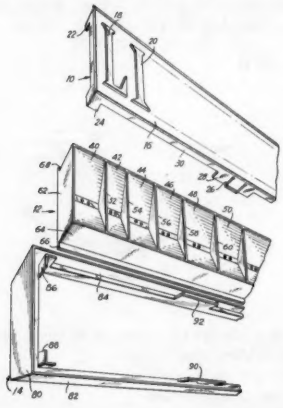
means adapted to engage the frames for hanging the frames and a selected leaf for display, and

a common means for separately, removably containing and storing the book, the frames, and the means for hanging them.

4,259,800
DISPLAY APPARATUS AND ASSOCIATED CIRCUIT

Alexander Schoenfeld, 39 Sycamore La., Roslyn Heights, N.Y. 11577

Filed Feb. 12, 1979, Ser. No. 11,507
Int. Cl.[3] G09F *13/04*
U.S. Cl. 40—444 12 Claims



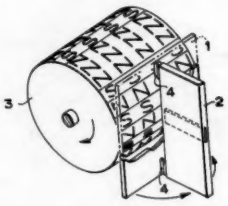
1. Apparatus comprising a plurality of spaced lights, reflectors operatively associated with respective of said lights, first means for optically isolating said light, second means for actuating said lights for selected periods of time to create an appearance of sequencing, and third means for displaying indicia, said means optically associated with respective of said lights to be illuminated thereby, said apparatus further comprising a casing for supporting the reflectors, first and third means, said reflectors and first means being captured between said casing and third means, said third means including shaped lenses, a pair of said lights being provided for each of said reflectors and one of each pair of said lights including a colored lens for change of color, said lights forming two sets, one of the sets including said colored lens, said second means including a clock circuit generating a sequence of pulses and a binary counter to count said pulses and to actuate said lights according to the count, said counter being adapted to selectively actuate at least one of the lights associated with each reflector at a time dependent upon the count, said counter alternating back and forth between said sets

---

4,259,801
DISPLAY DEVICE

Reijiro Ito, Tokyo, Japan, assignor to Kokusai Display Kogyo Co., Ltd., Tokyo, Japan

Filed Apr. 24, 1978, Ser. No. 899,566
Claims priority, application Japan, Apr. 22, 1977, 52-47125; Apr. 7, 1978, 53-41422
Int. Cl.[3] G09F *9/00*
U.S. Cl. 40—449 14 Claims



1. A display device comprising:

(a) a substrate having a surface;

(b) a plurality of display flaps, each flap having two surfaces, each flap rotatable about an axis located in a plane which is parallel to the surface of said substrate from a first position in which one surface of said flap is opposed to the surface of said substrate to a second position at which the other surface of said flap is opposed to the surface of said substrate, and vice versa;

(c) one of said flap surfaces having S polarity magnetization, the other of said flap surfaces being magentized to a N polarity;

(d) at least one driving magnet means having a longitudinal and lateral dimension and located rearwardly of said substrate, the driving magnet means having a plurality of magnetized thereon;

(e) said one of the driving magnet means being adapted to curve about a generally cylindrical surface in said longitudinal direction;

(f) at least a portion of said one of the driving magnetic means being circumferentially disposed about at least one axis parallel to its lateral dimension, so that at any given time, part of said driving means is circumferentially disposed about at least one of said axis;

(g) said one of the driving magnetic means acting upon more than one of the flaps across the lateral dimension;

(h) said driving magnet means being relatively movable with respect to said substrate and said flaps;

(i) said plurality of magnetized regions of said driving magnet means including S pole and N pole magnetized regions arranged such that when said driving magnet means arrives at a given position with respect to said substrate and said flaps, a magnetic force acting between said magnetized regions of said driving magnet means and said magnet secured to one such flap causes said flap to attain a predetermined one of said first and second positions;

(j) whereby said flap maintains its position when it is in said one position, and changes its position when it is in its other position.

4,259,802

PICTURE VIEWER

Peter Ackeret, Küsnacht, Switzerland, assignor to Licinvest AG, Chur, Switzerland

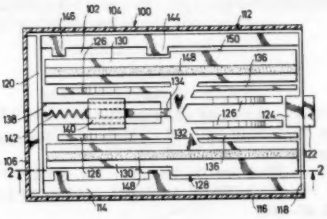
Filed Sep. 18, 1978, Ser. No. 943,368

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1977, 2742351; Oct. 7, 1977, 2745214

The portion of the term of this patent subsequent to Jan. 20, 1998, has been disclaimed.

Int. Cl.³ G09F *11/30*

U.S. Cl. 40—513 **60 Claims**



1. A picture viewer for a pile of pictures, comprising

enclosure means including a frame defining a viewing window and a slider reciprocably mounted on the frame, the frame and slider having relative obverse and reverse sliding movements in opposite directions along the window, the enclosure means also defining a picture compartment having one end adjacent the window to contain a pile of pictures with a picture on one end of the pile disposed at said one end of the compartment and adjacent the window,

a picture-changing mechanism in the enclosure means and operatively connected with the frame and slider for transporting an individual picture from a first end of the pile and returning said individual picture to the second end of the pile in response to the relative obverse and reverse sliding movements of the frame and slider, and

the picture changing mechanism including an individual picture transporting means and a pile transporting means, one of the transporting means being connected with the frame and movable therewith and the other of the transporting means being connected with the slider and movable therewith, the pile transporting means being disposed at one side of the compartment to engage one side of the pile of pictures, the individual picture transporting means having portions thereof disposed at one end of the compartment to engage said individual picture at the corresponding end of the pile and cooperating with the pile transporting means to change the picture at the window in response to such relative obverse and reverse sliding movements of the frame and slider, and said picture changing mechanism further including surface retentive means having picture surface engaging means spaced from a side of the compartment for engaging the face of the picture and the picture surface engaging means effecting a gripping relation with the face of the individual picture to effect relative movement between the individual picture and the pile, the surface retentive means being movable relative to the pile with the surface engaging means in engagement with the face of said individual picture opposite the pile in response to said relative movement between frame and slider whereby said individual picture is loosened from the pile.

4,259,803

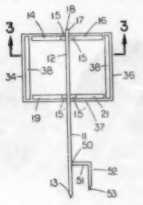
PORTABLE SIGN

Edwin C. Sittler, 355 N. Pine, P.O. Box 1962, Grand Island, Nebr. 68801

Continuation-in-part of Ser. No. 883,107, Mar. 3, 1978, abandoned. This application Jan. 3, 1980, Ser. No. 109,381

Int. Cl.³ G09F *7/18*

U.S. Cl. 40—607 **6 Claims**



1. A portable sign comprising:

(a) vertical frame means having a first end and a second end wherein said first end includes a driving pad attached thereto and wherein said second end includes at least one ground engaging means attached thereto;

(b) horizontal sign support arms attached to vertical frame means between said first end and said second end, said arms comprise a plurality of horizontally disposed rod elements which are attached to the vertical frame means in vertically spaced opposed pairs;

(c) foldable sign face means having a hole disposed substantially within the midpoint of said sign face and wherein said sign face is folded substantially along a fold line bisecting said hole whereby said sign face comprises two parallel sign surfaces and wherein said sign faces are supported by said outwardly extending horizontal sign support arms along said fold line and wherein said driving pad projects through said hole in said foldable sign faces;

(d) elongated, rigid sign edge stiffening members disposed along and coacting with the edges of the sign face wherein said parallel sign faces surfaces are releasably joined to said stiffening members, said stiffening members are fabricated from material which is heavier than the surrounding sign face material; the vertical spacing of the opposed pairs of rod elements is less than the length of the elongated stiffening members; and said parallel sign surfaces when releasably joined to said stiffening members form an inverted envelope from said foldable sign face.

4,259,804

PHYSIOGNOMICALLY BASED PUZZLE TOY

Stephen S. Samuels, 28 Lower Alcatraz Pl., Mill Valley, Calif. 94941

Filed Mar. 31, 1980, Ser. No. 136,125

Int. Cl.³ A63H *33/00*

U.S. Cl. 46—16 **9 Claims**

1. A puzzle toy comprising:

a plurality of layers, each layer having substantially the same generally ovoid peripheral contour;

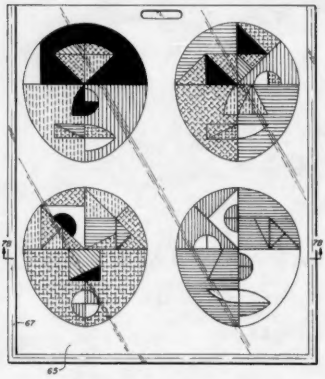
each of said layers consisting of a plurality of elements combinable to fill the entire area within said peripheral contour;

the elements of each layer having first and second oppositely facing contrasting surfaces with the elements being reversible to fit in corresponding portions of said area to provide contrast in the appearance of said layer when said area is filled by said combined elements;

said elements within a layer being capable of filling said area while forming a contrasting nose, mouth, and eyes of a stylized face, there being a sufficient multiplicity of elements in the region of said nose, mouth, and eyes to allow

at least one of the nose, mouth, and eyes to be changed with respect to the position or surface of the elements forming them that is presented to the viewer, to permit variations in facial expression within said filled area;

there being a sufficient multiplicity of elements within a given layer to permit the rearrangement and reversal of elements within said layer to form while filling said area, an abstract asymmetrical configuration reminiscent but not directly representative of a stylized face;



a predetermined portion of the area filled by a first group of said elements of a first of said layers being of a shape adapted to be filled by a second group of elements of a second of said layers with the individual elements of said second group being of different periphery than the individual elements of said first group to provide additional variety in the range of possible facial expressions and the level of abstraction.

4,259,805

AMUSEMENT DEVICE COMPRISING INFLATABLE DOLL AND SEPARABLE DOLL ENCLOSURE

J. Russell Hornsby, Jr., 1119 S. Semoran Blvd., Winter Park, Fla. 32792

Filed Jun. 8, 1979, Ser. No. 46,653
Int. Cl.[3] A63H *3/06, 13/16*
U.S. Cl. 46—44 **6 Claims**

1. A manually operable amusement device comprising:

a toy figure in the form of a doll;

said doll having a hollow chamber formed therein;

said doll having an inflatable portion surrounding said hollow chamber and being formed of elastomeric material;

manually operable inflation means connected with said doll to enable air to be pumped into said hollow chamber to thereby cause the elastomeric material of said inflatable portion to expand;

said doll having a flat support base to enable it to stand upright; and

a separable enclosure means into which said doll can be inserted;

said doll and said inflation means being completely free from attachment to or connection with said enclosure means;

said enclosure means having releasable engagement means which, in a first position are interengaged, and which, in a second position, are disengaged;

said releasable engagement means being disposed in said first position when said doll is inserted into said enclosure means and before said doll is inflated;

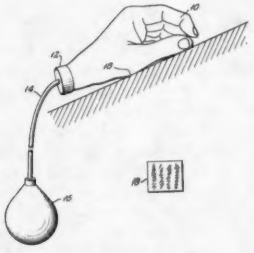
said releasable engagement means being moved to said second position when said inflation means is operated to cause said elastomeric material of said inflatable portion to expand into contact with said enclosure means, thereby simulating the appearance of the doll breaking out of the enclosure means.

4,259,806

WALKING TOY

John H. Troll, New York, N.Y., assignor to Summit Licensing Company, New York, N.Y.

Filed Jun. 20, 1980, Ser. No. 161,427
Int. Cl.[3] A63H *29/16, 11/00, 3/46;* **A63J** *3/00*
U.S. Cl. 46—44 **2 Claims**



1. A hand shaped toy comprising a glove of resilient flexible rubber-like material having a palm portion and portions corresponding to digits of a hand formed in the relaxed hand position, a resilient bulb containing a fluid, means fluidically coupling the wrist end of said glove with said bulb for fluid communication therebetween, said glove being of variable thickness at least between the digits and hand whereby movement of said digits relative to said palm occurs when fluid pressure to said glove is increased by depression of said resilient bulb, and means appended to at least a portion of said glove contacting a surface for causing movement of said hand along said surface when said bulb is reciprocally depressed.

4,259,807

DOLL WHICH GROWS

Marcia Silverstein, 64–34 Cloverdale Blvd., Bayside, N.Y. 11364

Filed Dec. 19, 1978, Ser. No. 971,047
Int. Cl.[3] A63H *3/20*
U.S. Cl. 46—161 **2 Claims**

1. A doll, comprising in combination, a main body member or trunk, and a pair of arms and a pair of legs which are attachable adjustably in length to said trunk, wherein said trunk includes a pair of loops at the shoulder portions thereof, and a pair of loops at a lower portion thereof, so that said arms and legs are insertable therethrough, wherein base ends of said

arms and legs are made foldable around said loops, wherein a plurality of rows of snap fastener elements are located along

said arms and legs for selectively engaging a cooperative snap fastener element at an end of said arms and legs.

4,259,808

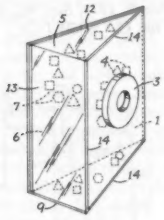
MAGNETIC OPTICAL TOY

Harry S. Oakes, 74 Smithbridge Rd., Glen Mills, Pa. 19342

Filed Nov. 2, 1979, Ser. No. 90,650

Int. Cl.³ A63H *33/26*

U.S. Cl. 46—240 **1 Claim**



1. A Magnetic Optical Toy comprising:

two opposed mirrors joined along a straight edge and angled in order to reflect symetrically repeated images;

a transparent cover enclosing the space between the two opposed mirrors;

ferrous metal pieces of various shapes and sizes operationally enclosed within the space between the two opposed mirrors by the transparent cover; and

a magnet adapted to be maneuvered against the exterior surface area of the two opposed mirrors and the transparent cover to attract and otherwise move the ferrous metal pieces through the interaction of the magnetic field of the magnet with the ferrous metal pieces to form design patterns between the two opposed mirrors and reflected, symetrically repeated design pattern images in the two opposed mirror surfaces.

4,259,809

ROTATING UNIT

Kenichi Mabuchi, and Tatuo Katunuma, both of Matsudo, Japan, assignors to Mabuchi Motor Co. Ltd., Tokyo, Japan

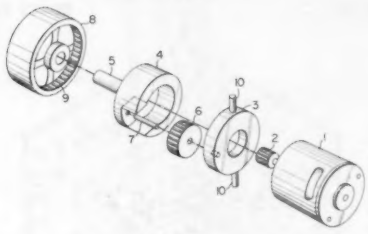
Filed Nov. 22, 1978, Ser. No. 962,931

Claims priority, application Japan, Dec. 7, 1977, 52-146905

Int. Cl.³ A63H *17/00*

U.S. Cl. 46—249 **8 Claims**

1. An electric, motor-driven model airplane having a drive motor including a rotatable output shaft; a propeller coupled to and driven by said drive-motor; spinner means positioned coaxially with respect to said drive motor output shaft for supporting said propeller, said spinner means including a first, rotatable spinner section having a gear formed on the internal surface thereof; there being further included a pinion gear fixed to and driven by said rotatable output shaft of said drive motor; an idler gear in meshing engagement with and driven by said pinion gear; a gear box positioned internally of said first spinner section and said gear formed on the internal surface thereof; said gear box having an idler gear shaft for rotatably supporting said idler gear with a part of said idler gear being exposed to the outside of said gear box; a wheel shaft formed integrally with said gear box for rotatably supporting said first spinner section, said gear box being fixed to said drive motor with said idler gear being supported by the meshing engage-



ment thereof with said pinion gear, said first spinner section being supported by the meshing engagement of said idler gear with said gear formed on the internal surface of said first spinner section; a hollow extension formed integrally and coaxially with said first spinner section for supporting said wheel shaft; bearing means provided between the internal surface of said hollow extension and said wheel shaft; and a second coaxial spinner section positioned contiguously and for rotation together with said first spinner section to cover said hollow extension.

4,259,810

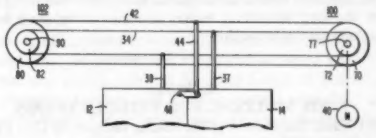
TRANSIT VEHICLE DOOR CONTROL APPARATUS

Harold E. West, North Huntingdon, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 25, 1979, Ser. No. 60,450

Int. Cl.³ E05C *7/06*

U.S. Cl. 49—118 **12 Claims**



1. In door control apparatus coupling a drive motor for controlling the movement of biparting passenger doors of a transit vehicle, the combination of:

first pulley means suitable for connection with said drive motor,

second pulley means positioned within the first pulley means and supported by the first pulley means for rotation in relation to that first pulley means,

a first door movement control means cooperative with the first pulley means and connected to a first of said doors,

A second door movement control means operative with the second pulley means and connected to each of the first and the second of said doors, such that when the first door moves in one direction away from the second door then the second door moves in the opposite direction away from the first door.

4,259,811

RELEASABLE RETAINING MEANS FOR A CLOSURE ELEMENT

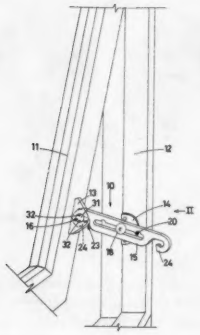
Ronald P. Davis, Wellington, New Zealand, assignor to Interlock Industries Limited, Wellington, New Zealand

Filed Oct. 4, 1979, Ser. No. 81,851

Claims priority, application New Zealand, Oct. 18, 1978, 188689

Int. Cl.³ E05F *9/00*

U.S. Cl. 49—356 **12 Claims**



1. A releasable retaining means for mounting on the inside of an outward opening closure element movable to open and close an opening the retaining means comprising in combination a first mounting means mountable on such element, a second mounting means mountable on a surround of such opening, and a stay which is slidably and pivotably coupled to one of the mounting means, the stay and said one mounting means being provided with interengaging guide means to guide slidable movement of the stay relative to said one mounting means said stay having engagement means by which the stay is pivotably couplable to said other mounting means and releasable therefrom when and only when the two mounting means are in a relationship which, in use, corresponds to a closed position of the closure element, said release of the stay from said other mounting means being achieved by the stay being slid relative to said other mounting means to a position where the engagement means and said other mounting means can be moved apart, and recoupling means which automatically cause the engagement means to couple to said other mounting means when the two mounting means are moved relative to each other into said relationship.

4,259,812

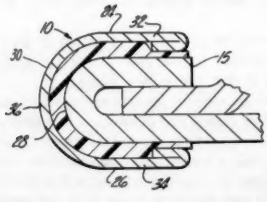
EDGE MOLDING FOR VEHICLE DOORS

Robert Adell, Bloomfield Hills, Mich., assignor to U.S. Product Development Company, Novi, Mich.

Continuation of Ser. No. 863,998, Dec. 23, 1977, abandoned. This application Mar. 16, 1979, Ser. No. 21,084

Int. Cl.³ B60J *5/00*

U.S. Cl. 49—462 **2 Claims**



1. In a vehicle body having a sheet metal closure, such as a door, on a marginal edge portion of which is disposed an ornamental and protective edge molding formed from a metallic strip into a generally U-shaped cross section comprising an inner leg and an outer leg and a bead formed at the free end of each leg by folding back the corresponding free edge of the strip interiorly of the U to provide a bead surface facing the opposite leg, the improvement characterized in that: a non-metallic strip softer than the metal of the edge molding and of generally U-shaped cross section and having inner and outer legs corresponding to the legs of the edge molding is disposed within the interior of the edge molding to insulate the edge molding from contact with the closure edge portion; the free end of each leg of said non-metallic strip covers the corresponding bead surface; and said beads, via said bead surfaces, press the free ends of the legs of said non-metallic strip against the closure edge portion to retain the edge molding and the non-metallic strip on the closure edge portion with the non-metallic strip providing a seal between the closure edge portion and the interior of the edge molding.

4,259,813

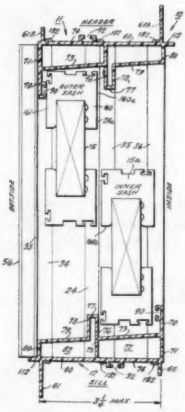
PLASTIC WINDOW

Kurt W. Winner, 22 Fairmount Ave., Mahwah, N.J. 07430, and Ignazio Cangialosi, 756 Rifle Camp Rd., West Paterson, N.J. 07424

Filed Jan. 9, 1979, Ser. No. 2,232

Int. Cl.³ E06B *1/04*

U.S. Cl. 49—504 **8 Claims**



1. A window frame comprising a pair of vertical members identical in cross-section but reversed and in mirror image with respect to each other and a pair of transverse top and bottom members forming, respectively, the header and sill; said top and bottom members being identical but inverted and reversed with respect to each other; said sill being provided with an upper wall which slopes transversely and downwardly toward the exterior of the window frame; said header having a lower wall which slopes upwardly toward the interior of the window frame and an upper outer sash and a lower inner sash.

4,259,814

TOOL SHARPENING MACHINE

Donald J. Glaser, and Harold W. Gaston, both of Emporia, Kans., assignors to Glendo Corporation, Emporia, Kans.

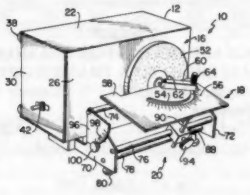
Filed Aug. 30, 1979, Ser. No. 71,200

Int. Cl.³ B24B *3/00*

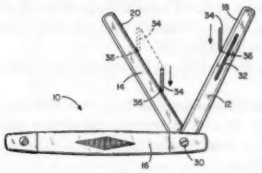
U.S. Cl. 51—122 **5 Claims**

1. A tool finishing machine adapted to rest on a support surface, comprising:

a housing having first and second opposed, spaced apart sidewalls, and a third sidewall extending between said first and second sidewalls;
a rotatable, abrasive wheel presenting a substantially planar, tool-engaging face;
motive means for said wheel operatively disposed within said housing;
means for rotatably mounting said wheel adjacent said first sidewall and generally parallel thereto, and for operatively coupling said wheel and motive means;
respective surface-engaging regions on said second and third housing sidewalls for firmly supporting said housing in a first housing position wherein said third sidewall is adjacent the support surface and said wheel is generally upright and alternately in a second housing position wherein said second sidewall is adjacent said support surface and said wheel is generally horizontal;
a substantially planar tool-supporting table; and
means for connecting said table to said housing for selective movement thereof between a first table position corresponding to said first housing position and wherein said table is adjacent said generally upright wheel for tool-supporting purposes, and a second table position corresponding to said second housing position and wherein said table is shifted completely away from the generally horizontal wheel for permitting free access to the wheel without interference from said table.

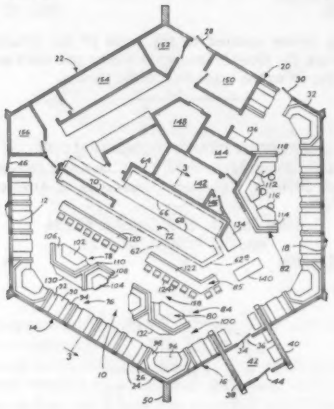


4,259,815
BLADE SHARPENER
William G. Kuban, Columbia Heights, Minn., assignor to Kurt Manufacturing Company, Inc., Minneapolis, Minn.
Filed Sep. 6, 1979, Ser. No. 73,008
Int. Cl.³ B24B *3/54*
U.S. Cl. 51—205 R **7 Claims**



1. A blade sharpener comprising:
handle means having a first receiving slot and a second receiving slot, each slot being open toward an opposite side of the handle means, and first and second stops associated with the first and second slots, respectively.
a first sharpening stone member pivotally attached to the handle means, the first sharpening stone member being capable of pivoting from a first position substantially within said first slot to an inclined position relative to the handle means against said first stop; and
a second sharpening stone member pivotally attached to the handle means and being capable of pivoting from a position within said second slot to an inclined position relative to the handle against a second stop wherein the second sharpening stone member is inclined relative to the first sharpening stone member so that the upper portions of the said sharpening stone members are in a spaced relationship.

4,259,816
RESTAURANT FACILITY
Ron B. Bergquist, 1506 Blvd. at Six Corners, Sherwood, Oreg. 97140
Filed Jul. 30, 1979, Ser. No. 61,809
Int. Cl.³ E04H *3/04*
U.S. Cl. 52—33 **10 Claims**

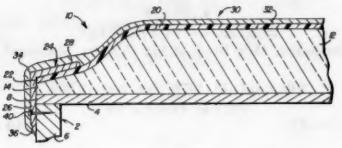


1. In a restaurant facility,
upright walls of substantially equal length defining an enclosure for the patrons of the facility, the walls being set at approximately 120° angles with respect to each other, thus to define the perimeter of an enclosure following hexagonal outline,
an entrance to said enclosure extending through one of said walls,
table and seating structure within said enclosure including a table and seating row extending in an elongate path which parallels said walls and extends to either side of said entrance and throughout at least half of the perimeter of said enclosure,
an elongate corridor substantially coextensive in length with said row paralleling said row, and disposed inwardly of said row which corridor provides access to said row,
an elongate kitchen and serving station extending across substantially the center of said enclosure facing said row and having one end remote from said entrance and an opposite end which is spaced opposite said entrance, and
restaurant support facilities located to the rear of said kitchen and serving station.

4,259,817
INSULATIVE ROOF APPARATUS
Frank S. Elliott, 4815 N. 63rd Dr., Phoenix, Ariz. 85033
Filed Feb. 5, 1979, Ser. No. 9,162
Int. Cl.³ E04B *7/00*
U.S. Cl. 52—96 **7 Claims**

1. Flexible insulation apparatus for a building structure having a roof and walls, comprising, in combination:
flexible insulation means disposed on the roof and terminating adjacent the juncture of the roof and the walls;
vapor barrier means, comprising a layer of flexible material impervious to moisture disposed on the flexible insulation means;
flexible seal coating means of more than nominal thickness

disposed on the vapor barrier means for protecting the vapor barrier means and for sealing the flexible insulation means and the vapor barrier means and for providing additional insulation for the apparatus;



flashing means secured to the walls of the structure for securing the flexible insulation means and the vapor barrier means to the walls and to the roof.

4,259,818

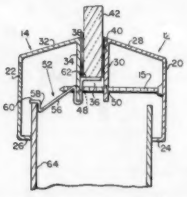
TAMPER-PROOF WINDOW UNIT

Carroll Stark, North Hollywood, Calif., assignor to Anemostat Products Division, Dynamics Corporation of America, New York, N.Y.

Filed Jul. 31, 1979, Ser. No. 62,284

Int. Cl.[3] E06B *3/58, 3/26*

U.S. Cl. 52—208 **14 Claims**



1. An improved tamper-proof window unit for assembly in multilateral openings in doors and the like; said unit comprising similar and mating first and second multilateral centrally open frame member adapted to be mounted about and marginally within a corresponding opening and respectively on opposite sides of a door, each of said frame members comprising a narrow elongated multilateral front panel extending generally in a plane parallel to the door plane and marginally about the door opening with an outer edge portion partially overlaying the door side surface adjacent the door opening, the front panel of said first frame member having at least one small front-to-rear opening arranged to communicate with the door opening through each of at least two generally opposite sides of the panel, and each frame member also comprising a narrow elongated multilateral generally L-shaped flange extending along and connected to the inner edge of its front panel, each L-shaped flange including a first narrow elongated panel which projects generally rearwardly from its associated front panel and a second narrow elongated panel which projects from a rear edge of the first panel outwardly with respect to the center of the door opening and in a plane generally parallel with the door side surfaces and frame front panels, the two second panels on the opposite frame members being spaced apart in parallel relationship with the frame assembled in the door opening whereby to define a slot which opens inwardly toward the center of the door opening and which is adapted to receive and hold a marginal portion of a pane of transparent material, a pane of transparent material disposed in the door and frame opening with its marginal portion entered in said slot, at least two similar spring clips mounted respectively on outer free edge portions of said second panels and in generally opposite relationship across the door and frame opening, each of said clips having a deflectable arm which projects generally forwardly and outwardly from its associated panel edge portion and which at its free end engages a wall defining the aforesaid opening in the door, each of said arms being flexed at least slightly inwardly at its free end by such engagement and said two spring clips thus serving cooperatively to locate said frame in at least one direction centrally within the door opening, and at least two connecting elements associated respectively with said two small front-to-rear openings in said front panel of said first frame member and projecting therethrough in a front-to-rear direction to engage said second frame member whereby to interconnect the frame members and thus secure the window unit and door in assembly with said front panels of said first and second frame members clampingly engaging opposite sides of the door adjacent its opening and with said two second panels clampingly holding the marginal portions of the pane of transparent material therebetween.

4,259,819

METHOD AND APPARATUS FOR ANCHORING SHEET MATERIAL TO A FRAMEWORK

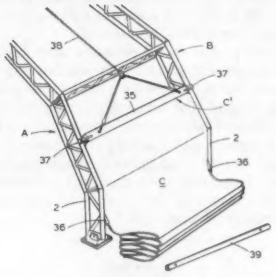
George A. Wemyss, 12 Regis Ct., Whitehouse Rd., Barnton, Edinburgh, Scotland

Filed Oct. 5, 1978, Ser. No. 948,855

Claims priority, application United Kingdom, Oct. 14, 1977, 42853/77

Int. Cl.[3] E04B *1/00*

U.S. Cl. 52—222 **27 Claims**



1. A method of anchoring an elongate strip of sheet material, under tension, to a framework constituted by a pair of spaced apart frame members extending upwardly from the ground, the method comprising the steps of:

(a) slidingly engaging the longitudinal edges of the strips in facing grooves formed respectively in each of the frame members in such a manner that the strip cannot be removed laterally therefrom,

(b) detachably fixing tension bars to the two end edges of the strip,

(c) pulling one of said tension bars to move the strip along said grooves in an unstretched condition until the strip extends under tension substantially the entire length of the frame members,

(d) anchoring the end edges of the strip under tension by fixing the tension bars relative to the frame members with the strips in a stretched condition across the width thereof.

4,259,820

HEAT-INSULATING, ANTISWEAT STRUCTURAL COMPONENT FOR PREFABRICATED RESIDENTIAL HOUSES

Takeichi Kita, and Takuji Kita, both of 2-288 Mineoka-cho, Hodogaya-ku, Yokohama, Japan

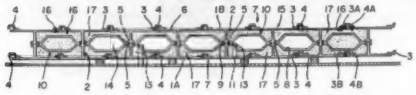
Filed Jul. 31, 1979, Ser. No. 62,307

Int. Cl.[3] E04B *1/70;* E04F *17/04*

U.S. Cl. 52—303 **4 Claims**

1. A heat-insulating, antisweat structural component for prefabricated residential houses comprising a set of H-shaped steel sheet piles each having opposed side plates coupled by a

coupling plate and fittingly coupled to the other in a side-by-side relationship, each of said H-shaped steel sheet piles having an engaging piece formed at one edge of each of said side plates and a fitting piece formed at the other edge of each of said side plates to be adapted to snugly fit said engaging piece, and fitting grooves formed centrally or the opposed surfaces of said coupling plate to extend in an opposed relationship to each other and in parallel with said side plates, at least one cylindrical partition member having a hollow cylindrical body and a pair of projection pieces integrally formed on said body in a symmetrical opposition to each other, and assembled with said



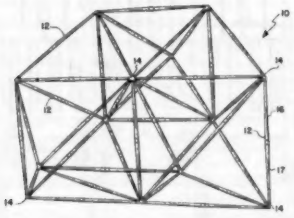
set of the H-shaped steel sheet piles, with said hollow cylindrical body being accommodated within a box-shaped cavity defined by a pair of the coupled H-shaped sheet piles and said projection pieces being snugly received in the fitting grooves in the coupling plates of the respective sheet piles, said H-shaped steel sheet piles having apertures formed at suitable positions and said accommodated cylindrical partition member having apertures located at the corresponding positions to those of said apertures in said steel sheet piles, and a tubular piece rigidly extending through each pair of said corresponding apertures in said steel sheet piles and said cylindrical partition members.

4,259,821

LIGHTWEIGHT STRUCTURAL COLUMNS

Harold G. Bush, Yorktown, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 29, 1977, Ser. No. 811,401
Int. Cl.³ E04C *3/29*
U.S. Cl. 52—309.1 **8 Claims**



1. A lightweight structural element adapted to be secured to a plurality of like members to form a truss structure comprising:

an elongated hollow body having a first end and tapering along the body length to a second end;

a first fitting secured to said first end and so constructed and arranged as to form engaging surfaces for attachment to an identical fitting secured to another identical structural element, and a second fitting secured to said second end and having an extension thereon to facilitate attachment of said second end to other elements;

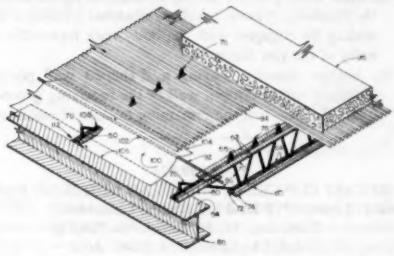
said first fitting being provided with a first length slidably received within said first end of said hollow body, a second length thereof integral with said first length and forming an annular shoulder exteriorly along the circumference of said hollow body, and a third length thereof integral with said first and said second lengths and forming a plurality of equal width fingers disposed in equal spaced adjacency along the circumference of said second length and wherein the spacing between any two individual fingers is at least as wide as an individual finger, and said elongated body being formed of a graphite/epoxy composite material.

4,259,822

PRECAST CONCRETE JOIST SYSTEM

Ira J. McManus, 39 Lincoln Ave., Florham Park, N.J. 07940

Filed May 14, 1979, Ser. No. 39,227
Int. Cl.³ E04B *1/16*
U.S. Cl. 52—334 **16 Claims**



1. An apparatus for providing concrete slab and steel construction, comprising:

(a) plural composite joist members disposed in a predetermined structural arrangement, in spaced apart relationship, at least one of said joist members comprising a beam element having a vertical central portion and a horizontal leg portion connected to said vertical central portion, said beam element having an end portion free of said horizontal leg portion;

(b) supporting means disposed at said joist members;

(c) a pan member comprising an elongated band whose length is greater than the distance between adjacent joists such that said pan member spans plural ones of said joists in the vicinity of said beam end portion.

4,259,823

ELASTIC SEALING AND MOUNTING STRIP

Edmund Hellriegel, Pulheim, Fed. Rep. of Germany, assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 11, 1979, Ser. No. 28,942
Int. Cl.³ E06B *3/62*; E04F *15/14*
U.S. Cl. 52—400 **3 Claims**

1. In combination, a motor vehicle bodywork having a window opening, a window panel and an elastic sealing and mounting strip for mounting the window panel in the opening,

the strip having a main body portion or a predetermined hardness,

the main body portion having an arch that covers a gap between the window and the vehicle bodywork,

the arch being engageable on the one hand against an external surface of the bodywork via a first sealing lip and on

the other hand against an external surface of the window via a second sealing lip,

the main body portion having a receiving groove corresponding substantially to the thickness of the window,

a sealing lip at one side of the groove engageable against the interior side of the window,

the main body portion having a downwardly extending holding lip having overlapping engagement with a flange rim of the vehicle body work projecting into the window opening,

the holding lip having a sealing lip engageable with the interior surface of the flange rim,

the main body portion having contiguous to the bottom of the receiving groove, a hollow chamber forming a tubular sealing lip engaged with the bodywork forwardly externally of the rim flange,

the hollow chamber having a Z-shaped wall portion in common with a bottom wall of the receiving groove and being thicker than the remaining hollow chamber wall.

4,259,824

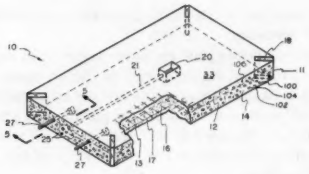
PRECAST CONCRETE MODULAR BUILDING PANEL

Fred T. Lopez, 1772 22nd St., Ogden, Utah 84401

Filed Aug. 16, 1976, Ser. No. 714,919

Int. Cl.³ C04B *7/14;* **E04C** *2/04*

U.S. Cl. 52—612 **5 Claims**



1. A precast modular panel for forming at least a portion of a building, comprising:

at least one layer of lightweight concrete substantially the full extent of the panel, comprising volcanic scoria, a suitable fibrous material, and pumice, the pumice being of a type having a microstructure substantial portions of which appear fiber-like under an electronic microscope, said type being found at least in the vicinity of Milford, Utah, Malad, Idaho, and Lava Hot Springs, Idaho, so that the volcanic scoria, the fibrous material and the pumice cooperate together in the concrete to render the layer structurally strong and resistant to water.

4,259,825

FOLDABLE BEAM

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; John M. Hedgepeth, Santa Barbara, Calif.; John V. Coyner, Conifer, Colo., and Robert F. Crawford, Santa Barbara, Calif.

Filed Feb. 23, 1979, Ser. No. 14,663

Int. Cl.³ E04H *12/18*

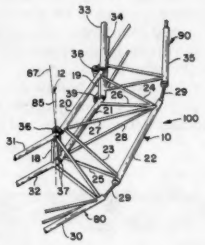
U.S. Cl. 52—645 **8 Claims**

1. A foldable structural member comprising:

a plurality of longitudinal segments, each of said longitudinal segments having sides;

connector means connecting said longitudinal segments, said connector means arranged so that said connector means describe a planar configuration, when the longitudinal segments are deployed in a substantially straight line, and describe a cylindrical configuration, when the segments are folded into a helical configuration for stowage; and

tensioning means associated with the sides of said member opposite said side having said connector means causing all of said segments to simultaneously pivot about the axes of said connector means from a stowed helical configuration



into a deployed substantially straight line configuration, to be held deployed by said tensioning means.

4,259,826

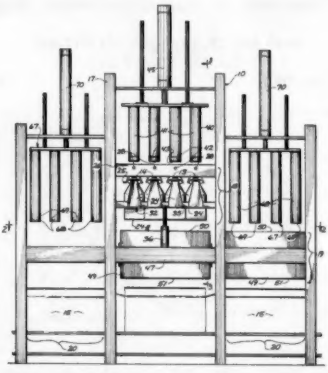
CASE PACKING MACHINE

Barry D. Campbell, Spokane, Wash., assignor to R. A. Pearson Co., Spokane, Wash.

Filed Oct. 27, 1978, Ser. No. 955,350

Int. Cl.² B65B *35/30, 39/00*

U.S. Cl. 53—543 **14 Claims**



1. A case packer for automatically packing bottles into cases, each bottle having an enlarged neck flange adjacent the bottle finish, said case packer comprising:

a framework;

a first station on the framework;

a second station on the framework;

bottle escapement means at the first station for receiving a group of bottles and for locating the individual bottles within the group relative to said framework by individual engagement of the enlarged neck flange of each bottle and for selectively releasing the bottles as a group by disengagement of their enlarged neck flanges;

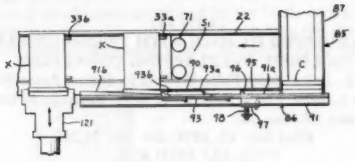
and bottle ram means adjacent the first station for engaging and moving a group of bottles from the first station to the second station as the group of bottles is released by the bottle escapement means.

4,259,827

PACKAGING APPARATUS

Roger H. Stohlquist, Rockford, Ill., assignor to Anderson Bros. Mfg. Co., Rockford, Ill.

Filed Nov. 9, 1979, Ser. No. 92,705
Int. Cl.³ B65B *43/28;* B31B *17/74*
U.S. Cl. 53—564 **12 Claims**



1. In a packaging apparatus for erecting, filling and closing cartons initially supplied in a flattened condition and having four body panels interconnected along fold lines to form a rectangular carton body; bottom closure flaps interconnected along fold lines to the lower ends of the four body panels for closing the bottom of the carton body; an open top; and a separate cover of rectangular configuration for closing the open end of the carton body and preformed with a marginal rim portion around the cover, the packaging apparatus being of the type having a filling station, spaced lateral carton guides for guiding the carton bodies along a linear path past the filling station, conveyor means operative to advance carton bodies along said path from a carton infeed station adjacent one end of the lateral carton guides and past said filling station to a delivery station, a carton magazine adjacent one end of said lateral carton guides for supporting a stack of flattened carton bodies, carton feed means operated in timed relation with said conveyor means for withdrawing a flattened carton body from the carton magazine and for opening the carton body and for depositing the opened carton body at said carton infeed station, the improvement wherein the carton magazine and carton infeed mechanism are arranged to deposit the carton bodies at the infeed station with the carton body inverted to have its open end lowermost, a cover magazine adjacent said one end of said lateral carton guides for supporting a stack of covers, means operated in timed relation with said conveyor means for feeding a cover from the cover magazine to a cover infeed station at a level below said carton infeed station, cover applying means operated in timed relation with said conveyor means for moving a cover from said cover infeed station and into the open end of a carton body to close the same as the carton body is advanced by the conveyor means away from the carton infeed station toward the filling station, and means disposed above said path for folding and closing the carton bottom closure flaps as the cartons are advanced by the conveyor means from the filling station to the delivery station.

4,259,828

IRISH MOSS HARVESTER

Dan R. Pace, P.O. Box 5083, Halifax, Nova Scotia, Canada (B3L 4M6)

Filed Feb. 19, 1980, Ser. No. 122,805
Claims priority, application Canada, Mar. 26, 1979, 324129
Int. Cl.³ A01D *45/08*
U.S. Cl. 56—9 **12 Claims**

1. A harvester for plant fronds oriented generally away from a substrate comprising:

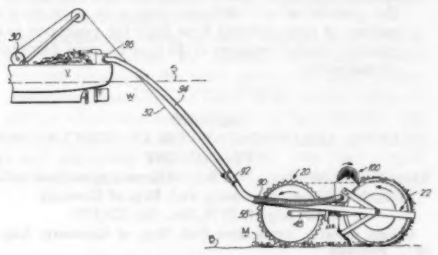
(a) a frame;

(b) a plurality of axially separated harvest rollers, adjacent rollers defining a space therebetween, said rollers being rotatably mounted on an axle journalled within said frame;

(c) a plurality of guide rollers, each guide roller being aligned with the corresponding space between adjacent harvest rollers:

(d) linkage means connecting each guide roller with said axle for independent pivotal movement relative thereto;

(e) harvest means engageable with said guide rollers and said harvest rollers, said harvest means including a plurality of endless members, each extending around a corresponding guide roller and being receivable in the space between adjacent harvest rollers which is aligned with that guide



roller, and a plurality of spaced apart harvest members extending between adjacent pairs of said endless members, said harvest members being engageable with the peripheral contour of the associated harvest roller whereby, as said harvester is moved forwardly fronds trapped between said harvest rollers and said harvest members are removed from said substrate; and

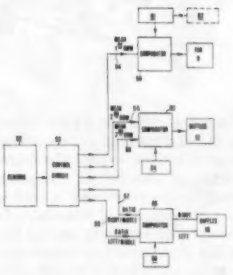
(f) means for collecting fronds harvested by said harvester.

4,259,829

COMBINE HARVESTERS

Gilbert J. I. Strubbe, Zedelgem, Belgium, assignor to Sperry Corporation, New Holland, Pa.

Filed Feb. 5, 1979, Ser. No. 9,197
Int. Cl.³ A01F *12/00*
U.S. Cl. 56—10.2 **28 Claims**



1. A combine harvester comprising:

a wheel supported chassis operable in use to be moved across a field with crops;

harvesting means on the chassis for harvesting crops;

threshing and separating means operable to receive harvested crops from the harvesting means and to separate crop material therefrom;

a cleaning sieve, disposed to receive thereon crop material from the threshing and separating means and having a plurality of openings therein for the passage therethrough in a first direction of cleaned grain separated from the crop material on the sieve;

fan means operable to blow a cleaning air stream in an opposing second direction through said openings in said sieve;

sensing means operable to sense crop material distribution on

the cleaning sieve and to produce an output signal indicative thereof;

utilization means responsive to the output signal; and

a grain pan disposed to receive crop material from the threshing and separating means and to feed said crop material to the cleaning sieve and deflector means adjustably associated with the grain pan, the utilization means of said combine harvester also comprising control means coupled to said deflector means and operable to control the position of said deflector means so as to vary the pattern of crop material flow from the grain pan to the cleaning sieve in response to the crop material distribution on said sieve.

4,259,830

GEARING ARRANGEMENT FOR AN AGRICULTURAL ATTACHMENT

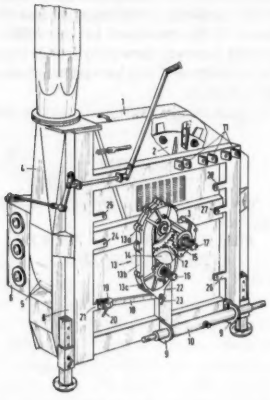
Xaver Lenzer, Sandberg, Fed. Rep. of Germany, assignor to Karl Mengele & Söhne, Gunzburg, Fed. Rep. of Germany

Filed Aug. 1, 1978, Ser. No. 929,978

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1977, 2735598

Int. Cl.³ A01D *69/00;* **F16H** *3/34*

U.S. Cl. 56—10.8 **5 Claims**



1. An agricultural attachment for a tractor for performing work on an agricultural material connectible to a power take-off connection on a tractor so that the tractor can pull and power the agricultural attachment, comprising a housing, a rotatable working means positioned in said housing for performing work on the agricultural material, a first shaft located within said housing for transmitting driving force to said working means, said first shaft extending outwardly from said housing, a first gear mounted on said first shaft outwardly from said housing, wherein the improvement comprises gearing means connectible to the tractor power take-off connection for transmitting driving power at different selected speeds to said first gear, said gearing means comprising a second shaft and a third shaft disposed in laterally spaced parallel relation to one another and to said first shaft and located outwardly from said housing, a second drive gear secured on said second shaft for selectively driving said first gear, a third drive gear of a significantly different size from said second drive gear mounted on said third shaft for selectively driving said first gear, means mounted on said housing for supporting said second and third shafts and said second and third gears mounted thereon and for displacing said second and third shafts through an arc centered about the axis of said first gear for selectively engaging one of said second and third shafts with the tractor power take-off connection so that the connection has a minimum bending angle, and means for securing said supporting means on said housing in a plurality of selected positions on the arc about the axis of said first gear within said housing, said housing including a surface facing toward said first gear, said surface having a pair of sides each located on an opposite side from and spaced outwardly from said first gear, said securing means comprises a plurality of brackets located in spaced relation along each of said sides with each of said brackets affording a different selected position for said supporting means.

4,259,831

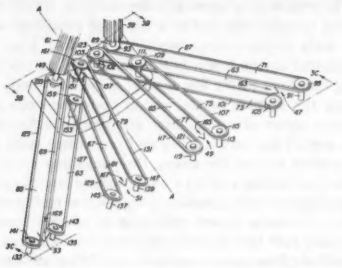
HARVESTER HEADER WITH TRANSVERSELY INCLINED, OVERLAPPING CONVEYORS

Marlyn L. Jerke, Cedar Falls; William E. Stokes, Janesville, and David L. Wolf, Cedar Falls, all of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Sep. 11, 1979, Ser. No. 74,265

Int. Cl.³ A01D *45/02*

U.S. Cl. 56—98 **22 Claims**



1. In a header for a row crop harvester with a crop receiving throat said header comprising:

a plurality of generally fore-and-aft, downwardly and forwardly inclined crop dividers, said dividers converging at the rear ends thereof,

a plurality of crop receiving, converging passageways defined between adjacent ones of said dividers, each passageway having a crop entry and crop exit at the forward and rearward ends thereof, respectively, said exits disposed adjacent said throat,

cutter means disposed adjacent the crop entry of each passageway for severing crop,

a frame comprised of two sections,

a substantially coplanar pair of planar conveyors respectively disposed on opposite sides of each passageway for conveying severed crop along said passageway and into said throat, a first and second pair of said conveyors mounted on one of said frame sections and a third and fourth pair of said conveyors mounted on the other of said frame sections, said first, second, third and fourth pairs of conveyors corresponding respectively to first, second, third, and fourth passages of said plurality of passages; wherein the improvement comprises said first and second pairs of conveyors inclined transversely and downwardly in a direction toward said third and fourth of said pairs of conveyors and the third and fourth pairs of conveyors inclined transversely and downwardly in a direction toward said first and second pairs of conveyors.

4,259,832

GRASS COLLECTION APPARATUS

Harry A. DuRay, 518 Blackburn Ct., Downers Grove, Ill. 60515

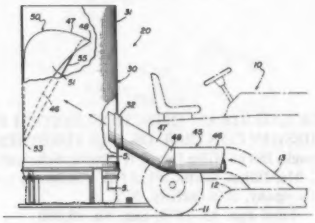
Filed Sep. 12, 1979, Ser. No. 74,819

Int. Cl.³ A01D *35/22*

U.S. Cl. 56—202 **10 Claims**

1. Grass collection apparatus for attachment to a rotary power mower having a blade housing with a grass discharge outlet therein for discharging therefrom a stream of air and

entrained grass clippings, said apparatus comprising a frame adapted to be mounted on the associated mower, an open-top mesh container mounted on said frame and having a grass inlet adjacent to the lower end thereof, said container having a mesh size such as to permit the free passage of air therethrough while inhibiting the passage of most grass clippings therethrough, duct means coupling the grass discharge outlet of the blade housing to said grass inlet of said mesh container for directing upwardly into said container the stream of air and entrained grass clippings generated by the blade, and a deflector mounted within said container and including two elongated concave portions intersecting at a cusp-like ridge disposed



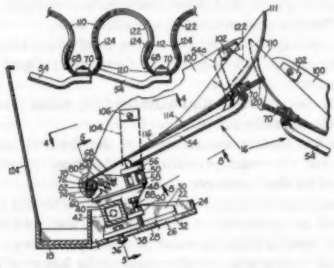
substantially centrally of the path of the stream of air and entrained grass clippings entering said grass inlet and inclined upwardly and inwardly of said container from the perimeter thereof, said deflector splitting the stream of air and entrained grass clippings to effect dispersal thereof within said container and away from said grass inlet with the air escaping through the container mesh, said deflector including a flattened hood portion at the upper end thereof sloping downwardly toward the inlet side of said container for preventing grass particles traveling up said deflector from exiting the open top of said container, said deflector and said mesh container cooperating to prevent buildup of back pressure within said container and resultant clogging of said grass inlet and said duct means.

4,259,833

CROP CATCHING FLOOR FOR HARVESTING MACHINES

Donald R. Mohn, Star Rte., Flaxville, Mont. 59222, and Herbert D. Mohn, 434 SE. 45th Ave., Portland, Oreg. 97215

Filed Jul. 9, 1979, Ser. No. 56,098
Int. Cl.³ A01D *46/00*
U.S. Cl. 56—330 **6 Claims**



1. A crop catching floor for harvesting machines of the type having a main frame arranged to move along the ground in straddling relation to vines and also having crop removing means arranged to remove crop articles from such vines, said catching floor comprising

(a) a pair of opposite side frame means having forward and rearward ends and arranged to be secured to a harvesting machine,

(b) a pair of opposite floor panels secured to said side frame means for catching falling crop articles removed by the crop removing means,

(c) said floor panels extending inwardly from respective ones of said side frames and having free end portions in overlapping relation with each other,

(d) each of said floor panels comprising a resilient membrane,

(e) support means on said side frames extending under said membranes and connected thereto to hold said membranes in their overlapping relation,

(f) said membranes being movable through vines at their overlapping portion by resilient distortion thereof whereby to pass by the trunk portions of vines in close association therewith and catch crop articles falling by gravity which have been removed by the crop removing means,

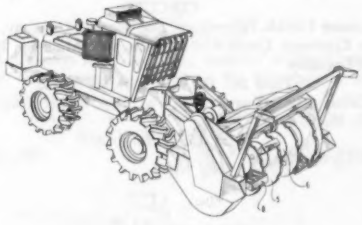
(g) and adjustment means associated with said support means arranged to adjust the inclination thereof.

4,259,834

SYNCHRONIZED FLAIL FOR TREATMENT OF FORESTRY RESIDUES

Michael B. Lambert, Annandale, Va., and Leonard B. Della-Moretta, Pomona, Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 860,275, Dec. 13, 1977, abandoned. This application Jul. 26, 1979, Ser. No. 61,170
Int. Cl.³ A01D *50/00*
U.S. Cl. 56—504 **1 Claim**



1. In a machine for treatment of tree thinning residues and logging slash of the type having free-swinging flails pivotably connected to rotatable support structures at a pivot point, the improvement wherein said flail comprises a cutting blade containing the effective center of mass of said flail, and a plurality of side arms connected at one end to said cutting blade and having at the other end means for pivotal connection to said rotatable support structure, said means for pivotal connection being located on said rotatable support structure and the length of said side arms being such that the distance R from the axis of rotation of said rotatable support structure to said pivot point, and the distance L from said pivot point to said flails effective center of mass have the following relationship:

$$\sqrt{R/L} = n/2$$

where n is any integer odd from 1 to 5.

4,259,835

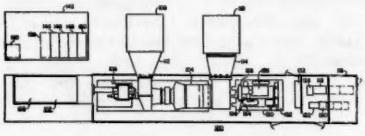
SYSTEM AND METHOD FOR MONITORING INDUSTRIAL GAS TURBINE OPERATING PARAMETERS AND FOR PROVIDING GAS TURBINE POWER PLANT CONTROL SYSTEM INPUTS REPRESENTATIVE THEREOF

Terry J. Reed, Latrobe, and Robert A. Yannone, Aldan, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 234,491, Mar. 14, 1972, abandoned. This application Feb. 6, 1978, Ser. No. 875,655

Int. Cl.[3] F02C *9/04*

U.S. Cl. 60—39.28 R **3 Claims**



1. A control for a gas turbine electric power plant having a gas turbine with compressor, combustion and turbine elements, a generator drivably coupled to said turbine for generating electric power, said control comprising fuel supply means for supplying fuel to said gas turbine combustion element, control means for controlling the operation of said plant, means responsively coupled to said control means for operating said fuel supply means to supply fuel to said combustion elements in controlled quantities, and pressure detection means positioned in said plant to sense combustion shell pressure in said combustion element and coupled to apply a signal representative of combustion shell pressure to said control means means for storing a calibration value for said pressure signal based on the relative values of the actual pressure signal and an expected pressure signal value during the last turbine shutdown, said calibration value being utilized by said control means to compensate the actual pressure signal provided by said detection means during turbine operation.

4,259,836

SOLAR POWER PLANT WITH OPEN GAS TURBINE CIRCUIT

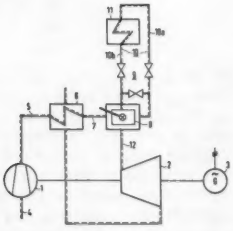
Hermann Finckh, Nüremberg, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Jul. 18, 1979, Ser. No. 58,422

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1978, 2833890

Int. Cl.[3] F02G *3/00*

U.S. Cl. 60—39.33 **5 Claims**



1. In a solar power plant with a gas turbine circuit, having a compressor, a solar heater, a combustion chamber for heating air compressed in said compressor, a turbine and a generator, said solar heater and said combustion chamber being connected between said compressor and said turbine, and valve means for connecting and disconnecting said solar heater to the circuit, said combustion chamber having double walls defining an outer space between said walls and an inner space, said outer space of said combustion chamber being connected in series with said solar heater upstream thereof, in flow direction of the compressed air, said inner space of said combustion chamber being connected downstream of said solar heater in flow direction of the compressed air, and said valve means connecting said outer space and said inner space of said combustion chamber to each other.

4,259,837

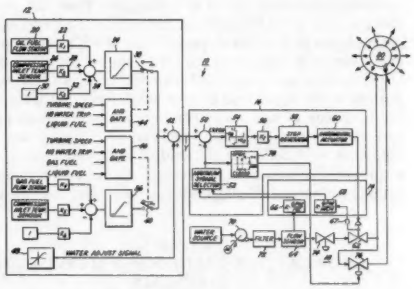
WATER AND STEAM INJECTION SYSTEM FOR EMISSION CONTROL OF GAS TURBINES

John N. Russell, Burnt Hills; David W. Smith, Schenectady, and Joseph C. McMullen, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 13, 1979, Ser. No. 48,060

Int. Cl.[3] F02C *6/00*

U.S. Cl. 60—39.55 **8 Claims**



1. A control system for the injection of water into the combustion chambers of a gas turbine for reducing the emission of oxides of nitrogen in the turbine exhaust, said system comprising:

means sensing the fuel flow to said turbine and providing an electrical signal proportional to fuel flow;

means sensing the water flow to the combustion chambers of said turbine and providing an electrical signal proportional to water flow;

a water control valve for controlling the water flow to said combustion chambers;

means for sensing the position of the shaft of said water control valve and providing an electrical signal proportional to shaft position;

maximum signal selector means responsive to said electrical signal proportional to shaft position and said electrical signal proportional to water flow and providing an output signal having a magnitude equal to the larger of the shaft position signal and the water flow signal, and

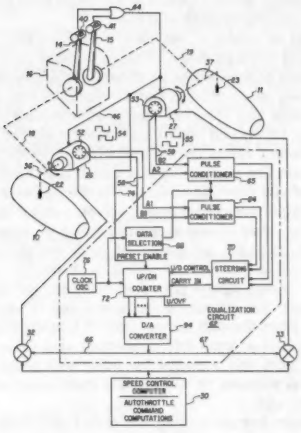
means responsive to said electrical signal proportional to fuel flow and said output signal from said maximum signal selector for computing a water error signal representative of the difference between the actual water-to-fuel flow and a predetermined water-to-fuel schedule, said water control valve responsive to said water error signal for maintaining the water flow to said combustion chambers in accordance with said predetermined water-to-fuel schedule.

4,259,838

THROTTLE TRACKING IN MULTIENGINE AIRCRAFT

James H. McCollum, Jr., and Leo P. Kammerer, both of Cedar Rapids, Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 26, 1979, Ser. No. 52,167
Int. Cl.[3] F02K 3/12
U.S. Cl. 60—224 6 Claims



1. An improved throttle control system for an aircraft of the type having more than one engine and including means for automatically generating aircraft flight control signals; a throttle control member for each one of the engines, each of the throttle control members being manipulable by a pilot of the aircraft, each of the throttle control members being coupled mechanically by appropriate linkages to a throttle of a corresponding one of the engines; servo means responsive to the flight control signals received from the signal generating means for simultaneously via the linkages driving the throttles and the throttle control members; and means responsive to manipulation by the pilot of any one of the throttle control members for disengaging the servo means, wherein the improvement comprises:

said servo driving means including a throttle servo unit for each one of the engines of said aircraft, each of said throttle servo units being located near said one engine and remote from said throttle control member;

said disengaging means including a switch mounted on each of said throttle control members, each of said switches coupled to each of said throttle servo units; and

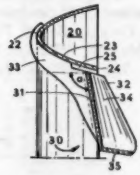
equalization means coupled to at least two of said throttle servo units for detecting a relative difference of movement between said two throttle servo units, said equalization means further including means for generating a repositioning signal, at least one of said throttle servo units being responsive to the repositioning signal to reposition said at least one throttle servo unit, thereby cancelling the relative difference of movement between said at least two throttle servo units and correspondingly, reducing relative differences between the corresponding throttle settings and the positions of the corresponding throttle control members.

4,259,839

FLAME HOLDER DEVICES FOR COMBUSTION CHAMBERS OF TURBOJET ENGINE AFTERBURNER TUBES

Gerard J. P. Bayle Laboure, Paris; Buisson, Marc F. B., Le Mee sur Seine, and Roger A. J. Vandenbroucke, Antony, all of France, assignors to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation, Paris, France

Filed Jun. 18, 1979, Ser. No. 49,138
Claims priority, application France, Jun. 22, 1978, 78 18714
Int. Cl.[3] F02K 3/10
U.S. Cl. 60—261 5 Claims



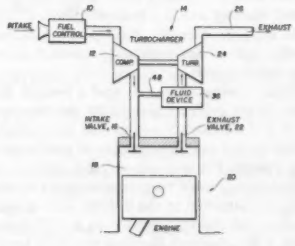
1. Flame holder device for a combustion chamber, in particular for the afterburner tube of a turbojet of the type comprising a flame holder ring of revolution with a constant cross section in the form of a U or a V, the flanks of said ring being joined by means of an arc, the spine of which is oriented toward the upstream of the flow of gas passing through the chamber, a plurality of flame holder arms radiating from one of the flanks of the ring, each arm having a transverse section in the form of a U or a V, the flanks of which are joined together by an arc, the spine of which is oriented upstream, the spine of the arc of each arm being located closer to the downstream or outlet edge of said flank, than to the attachment of said flank to the arc of the ring, characterized in that each arm is secured to the ring by means of a bracket essentially oriented in an axial plane of the tube and welded on one side to a portion of the generatrix of the ring and on the other, to the vicinity of the spine of the arm.

4,259,840

FLUIDIC WASTE GATE

Stephen M. Tenney, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 24, 1979, Ser. No. 87,891
Int. Cl.[3] F02B 37/12
U.S. Cl. 60—602 7 Claims



1. In the combination of an internal combustion engine, a turbocharger which includes a compressor on the inlet of a combustion chamber of the engine and a turbine on the outlet of the combustion chamber, and a waste gate means in parallel with the turbine and responsive to the speed of the engine for adjusting the operation of the turbocharger by controlling fluid bypassing the turbine, the improvement being said waste

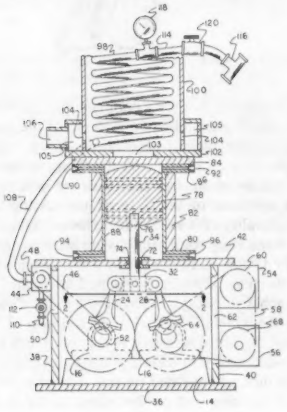
gate means which comprises a fluidic device having an inlet connected to the input of the turbine, an outlet connected to the output of the turbine, a first fluidic path creating a high resistance path between said inlet and outlet, a second fluidic path creating a low resistance path between said inlet and outlet, and a bias port and fluidic path responsive to the speed and load of the engine to determine the overall resistance between the inlet and outlet ports by proportioning the fluid flow from the inlet to the outlet between said first and second fluidic paths.

4,259,841

STEAM ENGINE

John C. Thomas, Sarasota, Fla., assignor to Universal Research and Development Corp., Tallevast, Fla.

Filed May 15, 1979, Ser. No. 39,195
Int. Cl.³ F01K *11/00*
U.S. Cl. 60—669 **4 Claims**



1. A steam engine, comprising:

(a) a cylinder housing having a top steam port therethrough for admission of high temperature steam, a bottom steam port therethrough for admission of high temperature steam, a top steam port therethrough for discharge of spent steam and a bottom steam port therethrough for discharge of spent steam;

(b) a top cylinder head attached to said cylinder housing;

(c) a support housing comprised of a support housing base, four vertical support members and a horizontal support member which functions both as the top element of said support housing and as a bottom cylinder head, said horizontal support member having a cylindrical opening therethrough to accommodate vertical movement of a piston driving rod;

(d) a piston, having a top face and a bottom face, movably located in the cylinder formed by the structural combination of said cylinder housing, said top cylinder head and said horizontal support member of said support housing;

(e) a rigid piston driving rod movably located in said cylindrical opening in said horizontal support member with one end rigidly attached to the bottom face of said piston and the other end rigidly attached to a "T" linkage bar, and having a longitudinal dimension which locates said top face of said piston just below said top steam ports when said piston is in its top dead-center position and which locates said bottom face of said piston just below said bottom steam ports when said piston is in its bottom dead-center position;

(f) a pair of crank shafts, each rotatably mounted on pillow block bearings fixedly attached to a support base with its longitudinal axis aligned in a horizontal direction parallel to the longitudinal axis of the other and each having a throw on the same end;

(g) a pair of connecting rods, each having one end pivotedly attached to one of said throws and the opposite end pivotedly attached to one end of said "T" linkage bar;

(h) a pair of rotatably meshed spur gears, each fixedly attached to one of said crank shafts;

(i) a coiled tube flash boiler enclosed in an insulated fire chamber located above and contiguous with said cylinder head, said fire chamber having a base with a cylindrical opening therein to enable the flames in said fire chamber to impinge directly on said top cylinder head for enhanced heat transfer through said base;

(j) a pair of rotary valves, each comprised of a cylindrical housing having a pair of steam admission ports and a pair of steam exhaust ports, a cylindrical shaft having a pair of opposed steam cavities and a cylindrical end cover;

(k) a chain and sprocket mechanism interconnecting said rotary valves and one of said crank shafts for rotation of said rotary valves during operation of the steam engine;

(l) a steam line connecting said coiled tube flash boiler and one of said steam admission ports through said cylindrical housing of one of said rotary valves, a steam line connecting the other of said steam admission ports and said top steam port for admission of high temperature steam through said cylinder housing, a steam line connecting said bottom steam port for discharge of spent steam through said cylinder housing and one of said steam exhaust ports through said cylindrical housing of said rotary valve, and a steam line connecting said other steam exhaust port and a means for using said spent steam for process purposes or venting said spent steam to the atmosphere; and

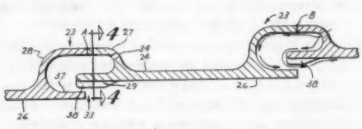
(m) a steam line connecting said coiled tube flash boiler and one of said steam admission ports through said cylindrical housing of the other of said rotary valves, a steam line connecting the other of said steam admission ports and said bottom steam port for the admission of high temperature steam through said cylinder housing, a steam line connecting said top steam port for discharge of spent steam through said cylinder housing and one of said steam exhaust ports through said cylindrical housing of said rotary valve and a steam line connecting said other steam exhaust port and a means for using said spent steam for process purposes or venting said spent steam to the atmosphere.

4,259,842

COMBUSTOR LINER SLOT WITH COOLED PROPS

John M. Koshoffer, Cincinnati; Edward E. Ekstedt, Montgomery, and Edward I. Stamm, Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Dec. 11, 1978, Ser. No. 967,928
Int. Cl.³ F02C *7/12*
U.S. Cl. 60—757 **1 Claim**



1. An improved combustor liner structure of the type having overlapping portions of telescoping outer and inner liner segments which together define an annular gap and means for transferring a cooling fluid from an outer plenum to flow through the annular gap for attachment to the inner surface of the outer liner segment downstream of said annular gap as a protective film barrier, wherein the improvement comprises:

(a) an annular enlargement section interconnecting the outer surfaces of said outer and inner liner segments and defin-

ing with the upstream end of said outer liner segment and the downstream end of said inner liner segment a chamber which fluidly communicates with the annular gap by way of a curvilinear surface adjacent the upstream end of said annular enlargement section;

(b) aperture means in the downstream side of said annular enlargement section for introducing the flow of cooling air into said chamber where it is then centrifuged radially inward by said curvilinear surface to pass through the radially inward side of said annular gap before attaching to the inner surface of the outer liner segment; and

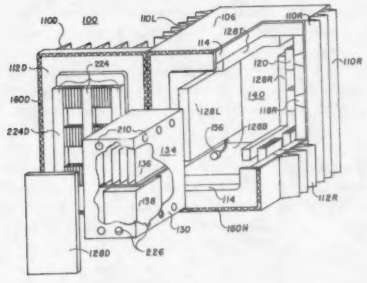
(c) a plurality of circumferentially spaced props attached to the inner surface of the upstream end of the outer liner segment and disposed in the radially outer side of said annular gap for thereby restricting the outward thermal growth of the downstream end of the inner liner segment, said props being elongated in the downstream direction and having tapered downstream ends for thereby facilitating attachment of said cooling air to said inner surface of said outer liner segment.

4,259,843

ISOLATION CHAMBER FOR ELECTRONIC DEVICES

Marvin L. Kausch, San Jose, Calif., assignor to Cromemco Inc., Mt. View, Calif.

Filed Oct. 9, 1979, Ser. No. 82,965
Int. Cl.³ F25B *21/02*
U.S. Cl. 62—3 **21 Claims**



1. An isolation chamber for providing a controlled environment for an electronic device, comprising:

a rigid outer support shell formed of thermally conductive material with outer heat exchange means exposed to the external environment;

a plurality of inner heat exchange means positioned inside the isolation chamber defining a temperature controlled central region for receiving the electronic device;

thermal insulation means positioned inside the isolation chamber between the outer support shell and the inner heat exchange means;

a plurality of thermally conductive standoff means extending from the outer shell through the insulation means to the plurality of inner heat exchange means forming a plurality of heat conductive paths therebetween;

a plurality of heat pump means, one positioned in each of the plurality of heat paths for controlling the temperature of the central region by supporting heat flow along the conductive paths when energized and inhibiting heat flow along the conductive paths when not energized;

an internal atmosphere within the central region for supporting convection heat currents which transfer heat between the electronic device and the inner heat exchange means;

circulation means within the central region for moving the internal atmosphere therein; and

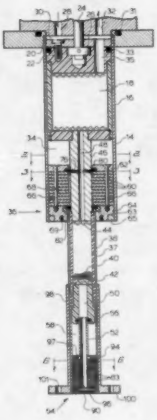
power means for providing electric power to the electronic device and to the heat pumps.

4,259,844

STACKED DISC HEAT EXCHANGER FOR REFRIGERATOR COLD FINGER

Domenico S. Sarcia, Carlisle; John T. Harvell, Lexington, and Robert M. Lewis, Hudson, all of Mass., assignors to Helix Technology Corporation, Waltham, Mass.

Filed Jul. 30, 1979, Ser. No. 61,919
Int. Cl.³ F25B *9/00*
U.S. Cl. 62—6 **11 Claims**



1. In a refrigeration system having a refrigeration gas which is expanded and thus cooled and which flows in heat exchange relationship with a load, heat exchange being through a refrigerator wall, a heat exchanger assembly comprising:

a stack of a plurality of plates of high thermal conductivity material, the plates having a substantial face-to-face thermal contact;

the stack of plates having an inner longitudinal refrigeration gas flow passage therethrough defined by a hole through each of the plurality of plates;

the plates being at least partially spaced from each other along radial grooves formed in the plates to define a plurality of flat radial refrigeration gas flow passages between the plates from the inner gas flow passage to at least one outer longitudinal gas flow passage; and

the stack of plates providing large-area refrigeration gas-contacting surfaces and a high thermal conductivity heat transfer path from the gas contacting surfaces to a load mounted to the stack.

4,259,845

LOGIC CONTROL SYSTEM FOR INVERTER-DRIVEN MOTOR

Dean K. Norbeck, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Sep. 12, 1979, Ser. No. 75,043
Claims priority, application Japan, Feb. 8, 1979, 54-14020
Int. Cl.³ G05B *5/00;* H02P *5/28;* F25B *1/00*
U.S. Cl. 62—209 **23 Claims**

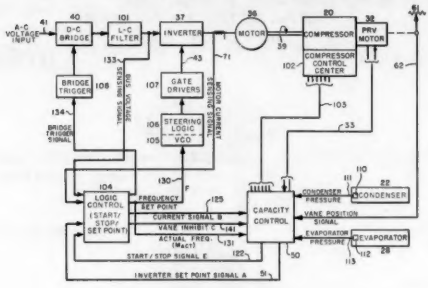
1. A logic control system for an inverter connected to drive an electric motor which in turn drives a load, the inverter providing an a-c voltage over an output line to the motor upon receipt of a d-c voltage over a d-c bus, which logic control system comprises:

a reference conductor on which a reference control signal is developed for use in regulating both the level of d-c voltage on the d-c bus and the frequency of the a-c voltage provided by the inverter;

a ramp generator circuit coupled to the reference conductor,

for providing a gradually increasing output signal during system start-up to function as the reference signal; and

a capacity circuit, having an output portion coupled to the reference conductor and an input portion connected to receive a signal varying as a function of the inverter operating frequency, said output portion including components connected such that the reference control signal developed on the reference conductor is the lower of the output signals from the ramp generator circuit and the capacity circuit.

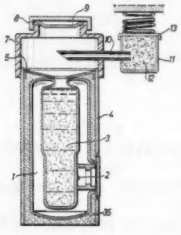


4,259,846

VESSEL FOR STORING CRYOGENIC LIQUIDS

Kjell Rudolphi, Ektorp, and Ingvar Johansson, Täby, both of Sweden, assignors to AGA Aktiebolag, Lidingo, Sweden

Filed May 15, 1979, Ser. No. 39,143
Claims priority, application Sweden, Jun. 8, 1978, 7806688
Int. Cl.[3] F17C *7/02*
U.S. Cl. 62—48 **7 Claims**



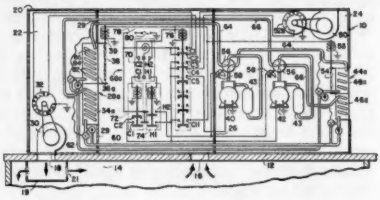
1. An apparatus for storing cryogenic liquid at a pressure approximately equal to the ambient pressure, comprising a Dewar-flask for containing said liquid, said Dewar-flask being filled with a material capable of absorbing a cryogenic liquid, a cavity externally of and in communication with the mouth of the Dewar-flask, and including a vessel arranged in open communication with the cavity, said vessel being filled with a material capable of absorbing a cryogenic substance when said substance is in liquid form but not to any substantial extent when said substance is in gas form, and said vessel being ventilatable to the surroundings.

4,259,847

STEPPED CAPACITY CONSTANT VOLUME BUILDING AIR CONDITIONING SYSTEM

Richard H. Pearse, Jr., La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Continuation-in-part of Ser. No. 789,480, Apr. 21, 1977, abandoned. This application Aug. 16, 1978, Ser. No. 934,156
Int. Cl.[3] F25D *17/06*
U.S. Cl. 62—93 **8 Claims**



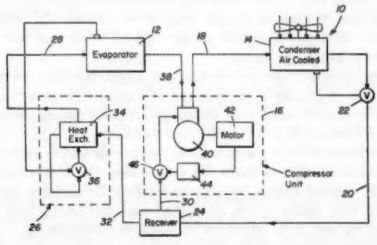
1. An air conditioning system for cooling and dehumidifying air for an enclosure comprising: a duct; inlet means for admitting air to said duct; outlet means for discharging air from said duct; a blower means for circulating air through said duct to said enclosure; a blower motor drivingly connected to said blower means; a refrigerant evaporator heat exchanger disposed within said duct for cooling and dehumidifying air circulated therethrough by said blower means and having plural refrigerant conducting tubes spanning through fins each of which is common to and in direct heat transfer relation with each of said tubes; means for supplying a refrigerant fluid to each of said tubes; and system control means responsive to a condition indicative of the air condition within said enclosure for discontinuing the supply of refrigerant to a first portion of said tubes and for reducing the speed of said blower motor in about the same proportion; said first portion of said tubes being less than all of said tubes and consisting of a plurality of said tubes which are generally uniformly dispersed across the path of air circulated through said evaporator heat exchanger whereby the ratio of sensible cooling capacity to the total of sensible and latent cooling capacity for said air conditioning system remains generally uniform despite a stepped reduction of sensible and latent cooling capacities.

4,259,848

REFRIGERATION SYSTEM

Carl A. Voigt, 120 E. Dakota St., Nampa, Id. 83651

Filed Jun. 15, 1979, Ser. No. 48,999
Int. Cl.[3] F25B *41/00*
U.S. Cl. 62—113 **15 Claims**



1. In a closed refrigeration system having low and high pressure circuit portions separated by an expansion valve sized to pass only refrigerant in a liquid state and a compressor for the pressurizing the refrigerant in the high pressure circuit portion, means for maintaining a vapor-free flow of liquid

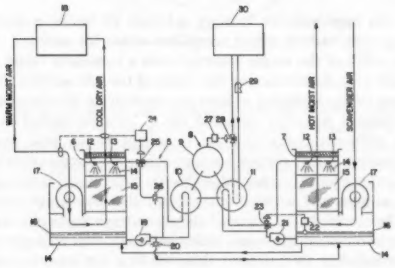
refrigerant to the expansion valve from the high pressure circuit portion, comprising chamber means connected to the high pressure circuit portion for separation of vapor produced by partial vaporization of the liquid refrigerant under variable ambient conditions, vapor removing means connected to the chamber means for withdrawal of said separated vapor from the chamber means, and heat exchange means for cooling refrigerant approaching the expansion valve from the high pressure circuit portion by flow in heat transfer relation to the refrigerant departing from the expansion valve in the low pressure circuit portion to liquefy any additional vapor formed in response to said withdrawal of the separated vapor.

4,259,849

CHEMICAL DEHUMIDIFICATION SYSTEM WHICH UTILIZES A REFRIGERATION UNIT FOR SUPPLYING ENERGY TO THE SYSTEM

William C. Griffiths, Lebanon, N.J., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Feb. 15, 1979, Ser. No. 12,384
Int. Cl.³ F25D *23/00*
U.S. Cl. 62—271 **7 Claims**



1. A system of the liquid sorbent dehumidification type for temperature and moisture conditioning of air, comprising:

(a) a refrigeration unit including a compressor, evaporator, condenser and refrigerant circulated therein;

(b) liquid sorbent using means for cooling and dehumidifying air, said means including means coacting with the evaporator for utilizing cooling energy from the evaporator in the cooling and dehumidification of air by the liquid sorbent using means;

(c) means for regenerating liquid sorbent from the liquid sorbent using means, including means coacting with the condenser for utilizing heating energy from the condenser to remove undesireable moisture from the sorbent and improve the concentration of the sorbent from the sorbent using means;

(d) the sorbent using means and the sorbent regeneration means including at least a pair of contactor towers, one of which is a conditioner wherein air is cooled and dehumidified, and the other of which is a regenerator wherein diluted liquid sorbent is concentrated, each of the towers comprising:

(I) means for distributing liquid sorbent within the tower;

(II) means for circulating air, under pressure, through the tower and into contact with liquid sorbent being distributed therein;

(III) a sump associated with each tower for receiving liquid sorbent after it contacts the air;

(IV) the conditioner including, a cooling coil interposed between the associated sump and distributing means, and means for circulating a liquid through and between the evaporator and cooling coil; and

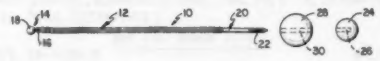
(V) the regenerator including, a heating coil interposed between the associated sump and distributing means, and means for circulating a liquid through and between the condenser and heating coil.

4,259,850

EARRING WITH SELECTABLE DECORATIVE ELEMENT

Leon M. Lalieu, Overlook Rd., Lake Paradise, Woodburn, N.Y. 12788

Filed Feb. 15, 1979, Ser. No. 12,371
Int. Cl.³ A44C *7/00*
U.S. Cl. 63—13 **3 Claims**



1. A method of hanging an ear ornament to maintain an unhealed earlobe hole opened and exposed to the air, comprising the steps of:

(a) passing a rigid securing member through a passage in a selectable decorative element;

(b) pulling a double-woven chain seured at one of its ends to one end of said rigid securing member through said passage;

(c) bringing a retainer member secured to the other end of said double-woven chain into abutting contact with said selectable decorative member;

(d) passing said rigid securing member completely through the earhole of a user so that said double-woven chain rests in said earhole;

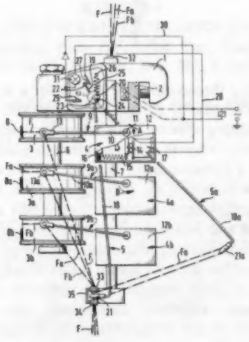
(e) engaging said securing member with securing structure on a closure member.

4,259,851

POSITIVE THREAD-DELIVERY DEVICE FOR TEXTILE MACHINES

Kurt A. G. Jacobsson, Ulricehamn, Sweden, assignor to Aktiebolaget IRO, Ulricehamn, Sweden

Filed Aug. 21, 1979, Ser. No. 68,320
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1978, 2836717
Int. Cl.³ D04B *15/48, 15/50*
U.S. Cl. 66—132 T **8 Claims**



1. A positive thread-delivery device for a textile, in particular a knitting, machine with a plurality of thread-guiding rollers, with which cooperates a common delivery belt and with which each one a thread-control element is associated, which thread-control element during the delivery of the thread holds same in a clamping position between the delivery belt and the thread-guiding roller and which during a drop in the tension of the thread which is delivered by the thread-delivery device can be changed over into a position in which it guides the

thread over an area of the thread-guiding roller which is free of the delivery belt to thus terminate the thread delivery, comprising the improvement wherein a tension feeler is provided which engages, independently from the thread-control element, the thread which is delivered by the thread-delivery device, and which feeler operates an electromagnet which loads the thread-control element.

4,259,852

POSITIVE THREAD-DELIVERY DEVICE FOR STRIPE KNITTING MACHINES

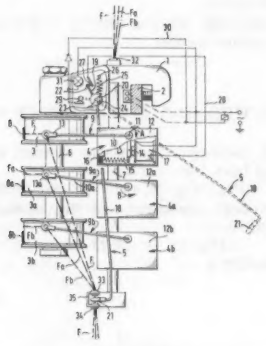
Kurt A. G. Jacobsson, Ulricehamn, Sweden, assignor to Aktiebolaget IRO, Ulricehamn, Sweden

Filed Aug. 21, 1979, Ser. No. 68,352

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1978, 2836716

Int. Cl.[3] **D04B** *15/48, 15/50*

U.S. Cl. 66—132 T **9 Claims**



1. A positive thread-delivery device for a knitting machine, wherein a plurality of thread-guiding rollers are associated with each knitting system, with which one common delivery belt cooperates, wherein with each thread-guiding roller there is associated a thread-control element which, during the processing of the thread in the knitting machine, holds same in a clamping position between the delivery belt and the thread-guiding roller and which during paying out of the thread can be changed over into a position in which it guides the thread over an area of the thread-guiding roller which is free from the delivery belt to thus terminate such delivery, and including a thread-breakage monitor, comprising the improvement wherein a swivel arm is provided which engages the thread which unwinds from the thread-delivery device, which swivel arm has associated therewith first and second switches which are operated at different angles of traverse of the swivel arm, the first switch controlling an electromagnet which loads the thread-control element, the second switch stopping the drive of the machine, the first switch being the first one which is operated during swinging out of the swivel arm from a position assumed during thread delivery, and the second switch being the second one which is operated during swinging out of the swivel arm.

4,259,853

USING A CONTINUOUS OPEN-WIDTH WASHING MACHINE FOR PILE-STRUCTURED TEXTILES, AND EQUIPMENT THEREFOR

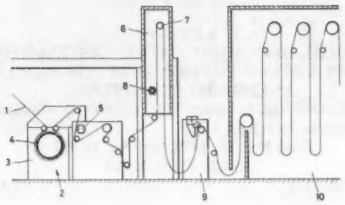
Hans Fleissner, Riehen-Basel, Switzerland, assignor to Vepa Aktiengesellschaft, Switzerland

Filed Feb. 6, 1979, Ser. No. 9,969

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1978, 2805010; May 26, 1978, 2822977

Int. Cl.[3] **D06B** *21/00, 5/08*

U.S. Cl. 68—5 D **16 Claims**



12. An apparatus for treating a length of textile material having a pile surface which comprises means for washing the entire width of the textile material with a treatment liquid to equalize irregularities across the width of the pile surface, said washing means including at least one sieve drum washing bath comprising a rotatably mounted sieve drum positioned in a liquid container containing the treatment liquid, said sieve drum having a sieve surface for supporting the textile material, being at least partly immersed within the treatment liquid, and being so arranged within the container that the liquid flows from the outside to the inside of said sieve drum, and a plurality of nozzle openings arranged within said container and spaced closely adjacent to said sieve drum surface for directing the treatment liquid in the form of a plurality of jets across the width of the textile material being supported on said sieve drum.

4,259,854

METHOD OF OBTAINING NATURAL LEATHER WITH HAIR FOR WARM UNLINED SHOES

Vera I. Knyazeva, ulitsa 50 let Sovetskoi Armii, 3-g; Nikolai V. Vasiliev, ulitsa 50 let Sovetskoi Armii, 36, kv. 7; Galina S. Khuditskaya, ulitsa Lermontova, 25/1, kv. 26; Alexandr I. Ponomarev, ulitsa 50 let Sovetskoi Armii, 34; Vasily I. Ponomarev, prospekt Lenina, 27, kv. 21, and Oleg M. Belyansky, ulitsa 50 let Sovetskoi Armii, 3-v, all of Yakutsk, U.S.S.R.

Filed May 31, 1979, Ser. No. 44,108

Int. Cl.[3] **C14B** *1/00;* **C14C** *11/00*

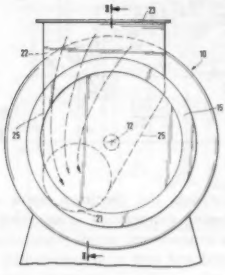
U.S. Cl. 69—21 **3 Claims**

1. A method of obtaining natural leather with hair, particularly suitable for the manufacture of warm unlined footwear, including the following successively performed operations: pretreating cattle hides into an unfinished leather product; splitting said product longitudinally to the thickness of the leather tissue of the grain-side layer within 2.0 to 2.5 mm; flushing the thus obtained grain split unfinished leather product with an aqueous solution containing a surface-active agent and a ferment; pickling; tanning; shaving; greasing said product so that it absorbs 3 to 5 percent grease by weight; drying; rolling; stretching; and grinding; all said operations of treating the unfinshed leather being conducted with the hair retained thereon.

4,259,855
APPARATUS FOR THE CHEMICAL TREATMENT OF ARTICLES

Erwin Biesinger, Rottenburg, Fed. Rep. of Germany, assignor to Seco Maschinenbau GmbH & Co. KG, Rottenburg, Fed. Rep. of Germany

Filed Aug. 27, 1979, Ser. No. 70,308
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1978, 2839558
Int. Cl.³ C14C *1/00*
U.S. Cl. 69—30 **5 Claims**

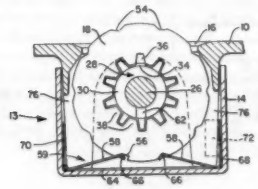


1. In an apparatus for chemical treatment of articles, particularly of hides, a combination comprising a housing; a drum rotatable in said housing and having an open end; an opening in said housing coaxial and closely adjacent to said open end; a double-walled door for closing said opening; a channel formed in said housing for communication with a source of flowing air; and means communicating the interior of said door with said channel formed in said housing and with the interior of said drum, respectively, so that air is admitted via said channel and door directly into the interior of said drum.

4,259,856
COMBINATION LOCKS AND DIAL-INDEXING SPRING THEREFOR

Rudolf Wingert, High Crest Lake, N.J., assignor to Presto Lock Company, Division of Walter Kidde & Company, Inc., Garfield, N.J.

Filed Apr. 3, 1979, Ser. No. 26,570
Int. Cl.³ E05B *37/12*
U.S. Cl. 70—70 **11 Claims**



1. In a combination lock having a shaft, a plurality of combination dials supported for rotation on the shaft, each dial having combination indicia spaced about its periphery and having indexing members spaced about its periphery and disposed so that an indexing member is located between each pair of successive indicia, and latch means operable to an open position only when the dials are turned to a predetermined orientation, the improvement comprising dial-indexing spring means including a base, and a pair of resilient arms for each of the dials, respectively, the arms of each pair originating at opposite edge regions of the base and extending away from said opposite edge regions of the base toward each other and toward the periphery of the corresponding dial and having free ends engaging indexing members, respectively, of the corresponding dial.

4,259,857
KEY-RETAINING LOOP FOR A KEY CASE

Giampiero Fontana, Milan, Italy, assignor to Valextra S.p.A., Milan, Italy

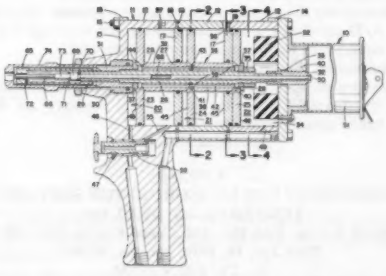
Filed Jan. 9, 1979, Ser. No. 2,172
Claims priority, application Italy, Jun. 29, 1978, 22208/78[U]; Sep. 15, 1978, 22278/78[U]
Int. Cl.³ A44B *15/00*
U.S. Cl. 70—456 B **4 Claims**

1. A key-retaining loop of the kind comprising a resiliently flexible split ring, a shank extending therefrom terminated by an enlarged header for mounting linkably and removably the loop in a supporting device housed within a key case, and stable and releasable mutual engagement means provided between said ring and said shank, said engagement means have the form of a bayonet coupling.

4,259,858
VACUUM-PNEUMATIC POWER TOOL

Richard B. Freeman, 1920 NW. 31st Ter., Gainesville, Fla. 32605, and Alfred W. Schmidt, Box 787, Keystone Heights, Fla. 32656

Filed May 31, 1979, Ser. No. 44,246
Int. Cl.³ B21J *15/34*
U.S. Cl. 72—391 **13 Claims**



1. In a multi-piston pneumatic power tool for blind riveting and the like, the combination of a cylinder body, a plurality of baffle elements mounted in said body in axially-spaced relationship to partition said cylinder into a plurality of separate cham-

bers, a piston slidably mounted in each chamber for pressure-responsive movement in said cylinder, spacer elements engaging said pistons to maintain them in axially-spaced relationship to each other, a tubular longitudinally-extending stem traversing said pistons for presenting a work-engaging member at the forward end thereof, means for securing said stem for contemporaneous axial movement with said pistons, said spacer elements providing a manifold fluid passageway for said chambers, a second fluid passageway provided by each piston between said manifold passageway and one of said chambers, selective valve means for supplying compressed air to said manifold passageway and said chambers to one side of said pistons to displace said pistons to retract said stem, piston-advancing means for restoring said stem to its initial position after retraction thereof, and means for supplying air suction to the opposite side of the piston in a portion of at least one of said chambers during pressure-induced retraction of said stem to increase the pressure differential on the piston.

4,259,859

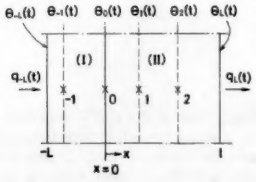
METHOD FOR DETERMINATION OF THERMAL PROPERTIES BY ARBITRARY HEATING

Yoshihiro Iida, 1722-4 Koshigoe, Kamakura-shi Kanagawa-ken, Japan; Haruhiko Shigeta, and Hisao Akimoto, both of Yokohama, Japan, assignors to Yoshihiro Iida, Kamakura and Showa Denko K.K., Tokyo, both of, Japan

Filed May 3, 1979, Ser. No. 35,717

Int. Cl.³ G01N *25/18*

U.S. Cl. 73—15 A **14 Claims**



1. A method for the simultaneous determination of thermal properties by arbitrary heating, which method comprises:

placing a given sample in intimate contact with a standard sample;

applying a flow of heat to the two samples in a direction perpendicular to a surface of contact between the two samples by use of a heat source disposed outside the two samples;

measuring temperature responses in the surface of contact of said two samples, said measurements further being made at least at one point within the standard sample and at most at two points within the given sample;

transmitting the measured temperature responses through an A/D convertor to a Laplace integrator to obtain Laplace integrals of the temperature responses; and

transmitting the Laplace integrals to an operator;

whereby the thermal properties such as thermal conductivity, thermal diffusivity and thermal capacity are determined simultaneously.

4,259,860

INSTRUMENT FOR MEASURING THE SOFTENING TEMPERATURE OF GLASS

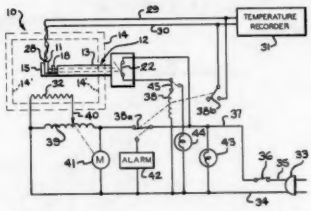
Dominick Labino, P.O. Box 430, Grand Rapids, Ohio 43522

Filed Apr. 16, 1979, Ser. No. 30,002

Int. Cl.³ G01N *25/04*

U.S. Cl. 73—17 R **5 Claims**

1. Apparatus for measuring the softening temperature of a specimen of glass comprising a furnace, means for heating said furnace to at least the softening temperature of the specimen, means for holding the specimen in said furnace including an anvil, a rod having first and second ends and means for mounting said rod for linear movement in a direction substantially perpendicular to said anvil, the specimen fitting between said first rod end and said anvil, means for biasing said rod towards said anvil with a predetermined force whereby said first rod end exerts the predetermined force on the specimen, switch means for detecting when said rod end has penetrated a predetermined distance into the specimen upon such specimen reaching its softening temperature comprising a snap action switch having an actuator and means positioning said actuator against said second rod end with said switch actuated, said switch releasing when said rod penetrates said predetermined distance into the specimen, and means responsive to said switch means for measuring the softening temperature of the specimen.



4,259,861

METHOD AND APPARATUS FOR DETERMINING WHETHER A FLUID IS LEAKING

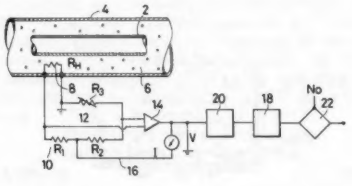
Hajime Yamamoto, and Shigehiro Shimoyashiki, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 26, 1979, Ser. No. 60,767

Claims priority, application Japan, Aug. 7, 1978, 53-95478

Int. Cl.³ G01M *3/00*

U.S. Cl. 73—40.5 R **13 Claims**



1. A method for determining whether a fluid is leaking from a container, comprising the steps of

(a) arranging an electrically conductive metal outside a container of the fluid,

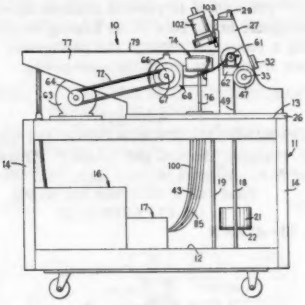
(b) raising the temperature of said electrically conductive metal to the extent that the fluid vaporizes upon contact with said electrically conductive metal, and

(c) detecting a temperature change of said electrically conductive metal based on the heat of the vaporization of the fluid contacting and vaporizing on said electrically conductive metal.

4,259,862
SMOOTHNESS ABSORBENCY TESTER

Lloyd D. Sheaks, and W. Howard Drew, both of Kalamazoo, Mich., assignors to Kaltec Scientific Instrument, Inc., Kalamazoo, Mich.

Continuation-in-part of Ser. No. 41,825, May 23, 1979, abandoned. This application Aug. 2, 1979, Ser. No. 63,309
Int. Cl.³ G01N 7/04
U.S. Cl. 73—73 **16 Claims**



1. A smoothness absorbency tester for testing the smoothness and absorption characteristic of an elongated porous strip of material, comprising:

frame means;

movable surface means on said frame means and drive means therefor, said surface means being adapted to support said strip of porous material to be tested;

blade means on said frame means and support means supporting at least one of said blade means and said movable surface means for movement toward and away from the other thereof;

first means for urging said blade means and said movable surface means into engagement with each other with a predefined amount of force to define an upwardly opening reservoir, said strip of material being driven with said movable surface means past said blade means;

liquid dispensing means for dispensing a liquid of a predetermined viscosity into said reservoir so that the said liquid contacts said strip of material, said blade means preventing a run off of said liquid in the direction of movement of said strip of material and thereby holding said liquid in said reservoir to be absorbed by said strip of material;

sensing means for detecting the presence or absence of a liquid in said reservoir, said sensing means including second means for producing a signal in response to the absence of liquid in said reservoir; and

timing means operatively interconnected to said liquid dispensing means and said sensing means, and automatically responsive to said signal, for timing an interval of time between the introduction of liquid into said reservoir and the indication of the absence of liquid therein.

4,259,863
MULTI-AXIS LOAD CELL

Gerlad C. Rieck, Sterling Heights, and Antoni J. Malarz, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 3, 1979, Ser. No. 99,328
Int. Cl.³ G01L 1/04
U.S. Cl. 73—862.04 **2 Claims**

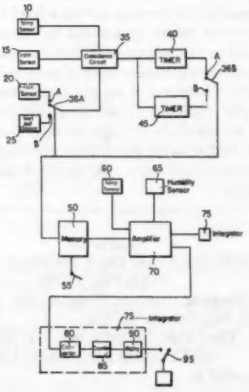
1. In combination with a multi-axis load cell of the type having a housing provided with a circular opening at one end thereof, a hub member disposed within the housing and formed with a planar surface portion and three radially extending arms each of which is located between a pair of stop members, a cylindrical portion formed on said hub member opposite said planar surface portion and located in said circular opening, three loop-shaped springs yieldably connecting the hub member and the housing so as to allow said hub member to move relative to said housing, and first and second transducer means respectively engaging said planar surface portion and said arms for measuring relative displacement between the housing and the hub member and generating signals corresponding thereto whereby the load exerted through the springs may be determined; the improvement wherein a ring member forms a part

of said housing and is provided with first adjustable means which support a portion of each spring and serve to apply a force to the associated spring to assure that said cylindrical portion is concentrically located in said opening, and second adjustable means carried by said housing and engaging said ring member for rotating the latter relative to the housing with resultant rotation of the hub member about its axis so that said arms are mechanically zero adjusted relative to said stop members.

4,259,864
WEATHER MONITORING APPARATUS

Gian P. Tavoni, Cambiano, Italy, assignor to Centro Ricerche Fiat S.p.A., Turin, Italy

Filed May 23, 1979, Ser. No. 41,970
Claims priority, application Italy, Jul. 4, 1978, 68565 A/78
Int. Cl.³ G01W 1/06
U.S. Cl. 73—170 R **9 Claims**



1. Apparatus for monitoring weather conditions, to detect conditions favorable to the growth of mildew, comprising in combination:

a temperature sensor operating to produce an output signal whenever the ambient temperature is above a predetermined threshold value,

a first rainfall sensor operating to produce an output signal when it is not raining,

a second rainfall sensor operating to produce an output signal when a predetermined amount of rain has fallen,

a coincidence circuit, the outputs of the three said sensors being connected to three inputs of said coincidence circuit,

said coincidence circuit operating to produce an output signal when all three said sensors are producing their respective output signals,

a timing device, the output signal from said coincidence circuit being connected to said timing device whereby the operation of said timing device is enabled while the output signal from said coincidence circuit is being produced, said timing device itself producing an output signal if the coincidental generation of output signals from all three sensors continues for a predetermined time interval set by said timing device.

4,259,865

FLUID-GAUGING SYSTEMS

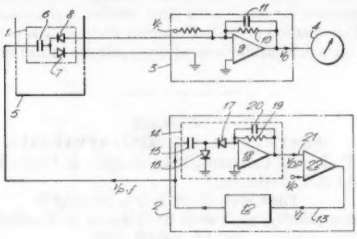
Ronald V. Myers, Basingstoke, United Kingdom, assignor to Smiths Industries Limited, London, England

Filed Oct. 11, 1979, Ser. No. 83,918

Claims priority, application United Kingdom, Oct. 12, 1978, 40350/78

Int. Cl.³ G01F *23/26*

U.S. Cl. 73—304 C **13 Claims**



1. A fluid-gauging system of the kind including a capacitive sensor adapted for immersion within a fluid in a reservoir, and electrical supply means connected to supply an alternating electric signal to said sensor such that the output of said sensor thereby varies in accordance with change in fluid quantity, the improvement wherein said supply means includes means for modifying the amplitude of the alternating signal supplied to said sensor in response to changes in the frequency of the signal in a manner such that the product of the frequency and amplitude of the signal supplied to said sensor is maintained substantially constant.

4,259,866

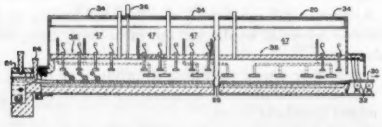
PYROMETER ASSEMBLY HAVING A HEATED VIEWING TUBE

George E. Sleighter, Natrona Heights, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 22, 1979, Ser. No. 22,654

Int. Cl.³ G01J *5/10*; G01K *1/08*

U.S. Cl. 73—355 R **11 Claims**



1. Method of measuring temperature of a substrate moveable through a heating chamber having a heated vapor atmosphere, comprising the step of:

viewing the substrate with an optical pyrometer through a passageway, the passageway including a hollow tube having heating means mounted therein, the heating means having a tubular shaped bore concentrically aligned with the interior of the tube;

energizing the heating means to heat the vapor atmosphere of the chamber in the bore of the heating means to a temperature at or above the dew point temperature of the vapor atmosphere to prevent condensation of the vapor atmosphere in the bore of the heating means; while

moving a purge gas through the passageway to move the vapor atmosphere out of the passageway.

4,259,867

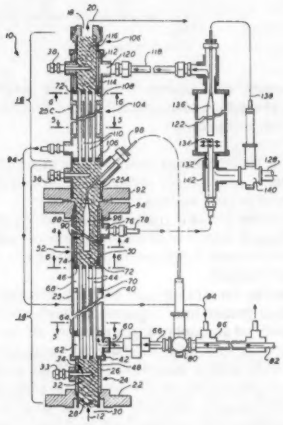
GAS SAMPLE CONDITIONING APPARATUS

Albert P. Foundos, Merrick, and Roland P. Ricardi, Oceanside, both of N.Y., assignors to Fluid Data, Inc., Merrick, N.Y.

Filed Jul. 9, 1979, Ser. No. 55,996

Int. Cl.³ G01N *1/22*

U.S. Cl. 73—421.5 R **11 Claims**



1. A gas sample conditioning apparatus for receiving pyrolysis gases from a hydrocarbon cracking furnace and providing a conditioned gas sample for on-stream process analyzers or the like said apparatus comprising:

inlet means for drawing a low velocity flow of said pyrolysis gases from a point downstream of said furnace;

a filer reflux and cooling stage overlying and extending upwardly from said inlet means, for accepting said low velocity gas flow, for filtering and cooling said flow to separate particulate matter and condense undesired hydrocarbon fractions, and for establishing a reflux flow to said inlet to maintain plug-free flow through said stage and to stabilize the temperature gradient therein; said filter reflux and cooling stage comprising a lower reflux filter section which is packed with a porous high surface area packing, said packing filtering said particulate matter entrained in said low velocity gas flow, and enabling condensates to form and wet the packing to thereby enable and promote said reflux to said inlet; a lower cooling section overlying said reflux filter section, said section being provided with cooling means for maintaining a desired temperature gradient along the gas flow direction, for condensing moisture and undesired hydrocarbons in the gas flow proceeding from said lower filter section, and for returning the resulting condensates to said lower section to maintain the reflux rate thereat; and a middle packing section overlying and extending upwardly from said

lower cooling section, for receiving the gas flow from same, a porous packing being contained in said section for returning further flow to said lower cooling section;

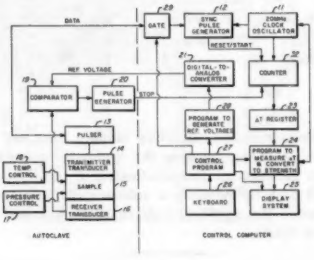
a further conditioning stage overlying and extending upwardly from said filter reflux and cooling stage, for accepting the gas flow proceeding therefrom, said conditioning stage including a relatively constant temperature section for maintaining uniform temperature in the flow proceeding from said stage; and

outlet means overlying said further conditioning stage, for accepting the gas flow therefrom, and for providing said conditioned output gas sample from said apparatus.

4,259,868
METHOD AND APPARATUS FOR NONDESTRUCTIVE TESTING OF CEMENT

Prabhakar P. Rao, and David L. Sutton, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Oct. 1, 1979, Ser. No. 80,827
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—597 **25 Claims**



1. A system for non-destructively measuring the compressive strength of a cement slurry sample comprising:

means for housing a cement slurry sample and for controlling the pressure and temperature of the sample;

means for generating an ultrasonic signal coupled to said sample;

means for measuring the transit time of said ultrasonic signal through the sample and for generating a measurement signal representative thereof;

means, responsive to said measurement signal, for generating according to a predetermined relationship relating transit time to compressive strength, a signal representative of the compressive strength of the sample; and

means for recording said compressive strength signal.

4,259,869
METHOD AND APPARATUS FOR INSPECTION AND FAIL-SAFE CONTROL OF THREADED JOINT TIGHTENING PROCESSES

Carl-Gustaf Carlin, Tyresö, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Sep. 29, 1978, Ser. No. 946,964
Claims priority, application Sweden, Oct. 7, 1977, 7711273
Int. Cl.³ F16B *31/02*
U.S. Cl. 73—761 **13 Claims**

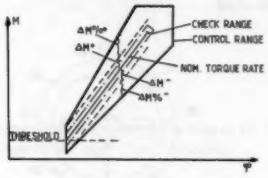
1. Method for tightening a threaded joint, which joint includes at least one threaded fastener, and for inspection and fail safe control of the threaded joint tightening processes, comprising:

rotating said at least one fastener with a torque applying means;

generating signals from said torque applying means which correspond to the transitory torque magnitude and the angular position of the joint;

generating a first signal at each of a number of succeeding angular positions of said at least one fastener during the main part of the tightening process, said first signal corresponding to the value of transitory torque mangitude at each of said angular positions;

providing reference signals corresponding to predetermined high and low torque limits which are a function of the corresponding angular position;



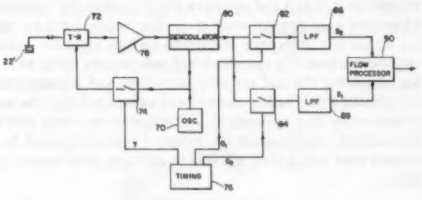
comparing said first signal at each of said succeeding angular positions with said reference signals; and

producing second signals in response to said high and/or low torque limits being passed.

4,259,870
DOPPLER METHOD OF MEASURING FLOW

Francis McLeod; Spencer Silverstein, both of Ithaca, and Robert J. Kurtz, New York, all of N.Y., assignors to Howmedica Inc., New York, N.Y.

Continuation-in-part of Ser. No. 685,902, May 12, 1976, Pat. No. 4,142,412. This application Feb. 26, 1979, Ser. No. 15,404
Int. Cl.³ G01F *1/66*
U.S. Cl. 73—861.25 **13 Claims**



1. A method for determining the volume flow of a fluid flowing through a conduit by use of a single transmitting transducer, the fluid having energy-scattering interfaces, the method comprising the steps of:

producing and transmitting a defined ultrasonic pulsed sound field with a single transmitting transducer, said sound field illuminating an entire cross-section of the conduit;

receiving with a receiver means a reflected signal resulting from said transmitted sound field;

selecting the pulse length and sampling period of the received signal such that a signal is obtained from a sampled region normal to the direction of propagation of the transmitted sound field;

obtaining a Doppler signal from said received signal;

sampling a known volume of the fluid totally within the conduit with said single transducer and receiver means and obtaining the power return of a Doppler signal from the signal received from said known volume to obtain a calibrating factor;

calculating the first moment of the Doppler signal received from said normal sampled region; and

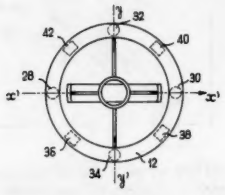
dividing said first moment by said calibration factor and thereby obtaining the volume flow through the conduit.

4,259,871

GYROSCOPES

Jean-Claude Kerhoas, Hanches by Epernon, and Gilles Cattan, Arpajon, both of France, assignors to Societe de Fabrication d'Instruments de Mesure S.F.I.M., Massy, France

Filed Oct. 25, 1977, Ser. No. 845,440
Claims priority, application France, Jun. 6, 1977, 77 17226
Int. Cl.[3] G01C *19/28, 19/30*
U.S. Cl. 74—5.46 **2 Claims**



1. A gyroscope comprising a rotor driven by a drive shaft through the intermediary of an intermediate ring connected to the motor and to the rotor by torsion bars at 90° with respect to each other, said torsion bars providing a return torque for the rotor, and precession motors for applying precession torques to the rotor in planes containing the axis of rotation of the drive shaft, wherein the precession motors are fixed electromagnets exerting a magnetic attraction on a ferromagnetic part of the rotor, with an airgap between said part and the electromagnets, and wherein the electromagnets are located in groups of two diametrically opposite to each other with respect to the drive shaft of the rotor, two diametrically opposed electromagnets receiving a common biasing current added to a variable amount of current which is positive for one electromagnet of a group and negative for the other, by means of an adder and a substractor each receiving on one input an electrical signal of a reference amplitude and on the other input an electrical signal of a variable amplitude, means being provided for measuring the said variable amplitude, and adjusting means for adjusting the biasing current to a value such that the torque produced by two opposite electromagnets receiving said biasing current compensates the return torque produced by the torsion bars when they are displaced from their central position.

4,259,872

GROUND WHEEL DRIVE APPARATUS

Earl E. Chandler, P.O. Box 1624, Coolidge, Ariz. 85228

Filed Jun. 29, 1979, Ser. No. 53,411
Int. Cl.[3] F16H *37/00*
U.S. Cl. 74—13 **6 Claims**

1. A ground wheel drive apparatus for trailing attachment to the toolbar of a farm machine to provide rotary power to the applicator drive shaft of the farm machine when said apparatus is towed behind the farm machine, said ground wheel drive apparatus comprising:

(a) a first frame for fixed attachment to the toolbar of the farm machine, said first frame having an extending end;

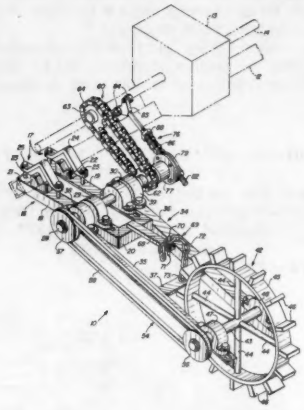
(b) a transverse drive shaft rotatably journaled on the extending end of said first frame and disposed to be parallel with the toolbar and applicator drive shaft of the farm machine;

(c) a second frame having said transverse drive shaft rotatably journaled on one end thereof so that said second frame is pivotably movable about the rotational axis of said transverse drive shaft;

(d) a ground engaging wheel rotatably journaled on the opposite end of said second frame;

(e) a first drive means connected between the axle of said ground engaging wheel and said transverse drive shaft for rotatably driving said transverse drive shaft upon rotation of said ground engaging wheel;

(f) a second drive means for connection between said transverse drive shaft and the applicator drive shaft of the farm machine for driving the applicator drive shaft when said transverse drive shaft is rotatably driven; and



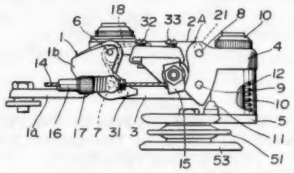
(g) stabilizer means extending radially from said transverse drive shaft for engaging the applicator drive shaft of the farm machine to dampen flexing of the applicator drive shaft and to maintain a substantially constant distance between the applicator drive shaft and said transverse drive shaft.

4,259,873

DERAILLEUR

Masashi Nagano, Sakai, and Mitsuhide Isobe, Toyonaka, both of Japan, assignors to Shimano Industrial Company Limited, Osaka, Japan

Filed May 30, 1979, Ser. No. 43,682
Claims priority, application Japan, Jun. 2, 1978, 53-75921[U]; Dec. 9, 1978, 53-170080[U]
Int. Cl.[3] F16H *11/00*
U.S. Cl. 474—82 **9 Claims**



1. A derailleur for switching a driving chain to one of a plurality of multi-stage sprockets by operation of a control wire comprising:

a four member linkage mechanism comprising a base member, first and second link members supported swingably to said base member, and a movable member supported to said link members in relation of being movable in forward and return reciprocation with respect to said base member, said movable member carrying a chain guide; and

A return spring for biasing said movable member in said return movement direction;

said movable member being movable forward with respect to said base member when said control wire is pulled against said return spring, being movable in return by said return spring with respect to said base member when said control wire is

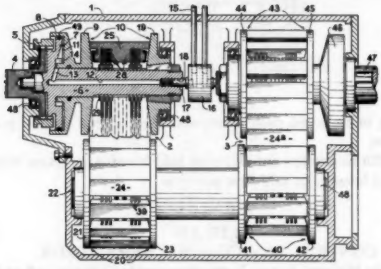
released, and being capable of free reciprocal movement in a given range with respect to said base member without being subjected to the action of said return spring, so that when said control wire is operated in its pull direction, after the pull-stroke of said wire exceeds the range of free movement of said movable member, said movable member is moved forward and at the terminus of said forward movement said movable member is made freely movable in a given range in the forward movement direction.

4,259,874

TRANSMISSION MECHANISM HAVING A VARIABLE TRANSMISSION RATIO

Louis Guirriec, Cormeilles en Parisis, France, assignor to Fonderie de L'Yonne, Sens, France, one half interest

Filed Jan. 12, 1979, Ser. No. 2,905
Claims priority, application France, Jan. 12, 1978, 78 00782
Int. Cl.³ F16H *55/52;* F16G *51/80*
U.S. Cl. 474—28 **23 Claims**



1. A transmission mechanism having a transmission ratio which is variable in a continuous manner, comprising at least one driving shaft and at least one driven shaft, a first pulley mounted on the driving shaft to rotate with the driving shaft and having a cheek which is fixed in translation and a cheek which is movable in translation relative to the fixed cheek, a second pulley mounted on the driven shaft to rotate with the driven shaft and having a cheek fixed in translation and a cheek which is movable in translation relative to the fixed cheek of the second pulley, means associated with the displacement of the movable cheek of the first pulley, means for biasing the movable cheek toward the fixed cheek of the second pulley, and transmission means extending around the first pulley and second pulley, radially extending elements mounted on the driving shaft and the driven shaft for rotation with the driving shaft and the driven shaft and located between the fixed cheek and the movable cheek of the first pulley and the fixed cheek and the movable cheek of the second pulley said radially extending elements being axially movable on said driving and driven shaft as the distance between the cheeks varies, said transmission means having portions which define recesses in the transmission means, the radially extending elements being capable of engaging in corresponding recesses of said recesses in operation of the mechanism, said portions of the transmission means having an elasticity transversely of the transmission means whereby to ensure the gripping of said radially extending elements upon the application of a force for moving the cheeks of said first and second pulleys toward each other.

4,259,875

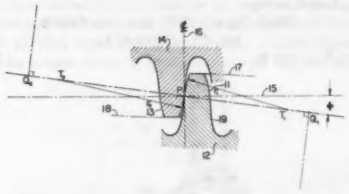
HIGH-TORQUE LOW-NOISE GEARING

William S. Rouverol, P.O. Box 9122, Berkeley, Calif. 94709

Filed Aug. 7, 1978, Ser. No. 931,855
Int. Cl.³ F16H *55/08*
U.S. Cl. 74—462 **23 Claims**

1. A pair of mating gears having central axes lying in a common plane,

teeth formed on said gears to have conjugate profiles that make contact along a path of contact having an average slope of less than 14°,



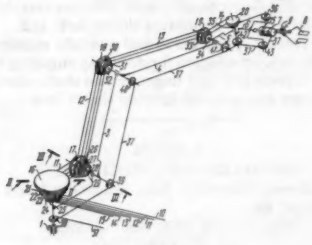
said gear shaving a maximum line of action in the transverse direction longer than eight tooth modules.

4,259,876

MECHANICAL ARM

Petr N. Belyanin, ulitsa Tukhachevskogo, 23, korpus 2, Kv. 186; Konstantin V. Frolov, Ljublinskaya ulitsa, 3, kv. 123; Aron E. Kobrinsky, ulitsa Dmitria Ulyanova, 4/34, korpus 5, kv. 267; Alfred I. Korendyasev, ulitsa Kosmonavtov, 14, korpus 1, kv. 90; Boris S. Rozin, 2 ulitsa Mashinostroenia, 9; Boris L. Salamandra, ulitsa B. Cherkizovskaya, 5, korpus 8, kv. 35; Felix P. Sokolovsky, Leningradsky prospekt, 75a, kv. 90; Jury V. Stolin, ulitsa Gorkogo, 40, kv. 14, and Leonid I. Tyves, 1348, Yaroslavskoe shosse, 12, kv. 22, all ofMoscow, U.S.S.R.

Filed Oct. 2, 1979, Ser. No. 81,254
Int. Cl.³ B25J *9/00, 11/00*
U.S. Cl. 74—469 **31 Claims**



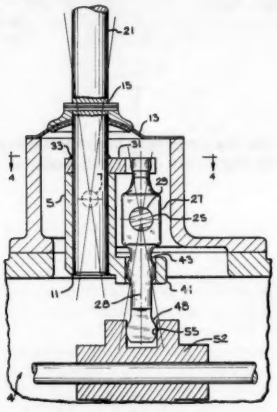
1. A mechanical arm comprising: a base; a plurality of pivotally connected links supported by said base; a plurality of individual motors in a number equalling that of said links; each said motor being connected through driving kinematic chains with the respective one of said links; a tensioning mechanism of which the tensioning member is operatively connected with said links through tensioning kinematic chains; differential gears of said tensioning mechanism, in a number equalling that of the driving kinematic chains tensioned by said tensioning member, one output of each said differential gear being operatively connected to one of said individual motors and two other outputs thereof being operatively connected with the preceding and successive ones of said differential gears, the two free outputs of the two terminals ones of said differential gears being operatively connected, respectively, to said base and to said tensioning member.

4,259,877

TRANSMISSION SHIFT CONTROL

Leo R. Kessmar, Northwood, Ohio, assignor to Dana Corporation, Toledo, Ohio

Filed Jul. 16, 1979, Ser. No. 58,076
Int. Cl.³ G05G 9/14
U.S. Cl. 74—473 R **15 Claims**



1. A shift mechanism for the shifter forks of a transmission comprising:
- a pivotally mounted member, said member defining an opening;
- a shift lever rotatably positioned in such opening of said member;
- a shaft positioned in adjacent spaced apart relationship to said member;
- a shift finger pivotally and slideably positioned on said shaft, said shift finger being engageable with one of said shifter forks of said transmission;
- a first bracket connected to said shift lever, said first bracket adopted for drivingly engaging said shift finger and sliding said shift finger on said shaft, whereby said shift finger is moved to select a different shifter fork; and
- a second bracket connected to said pivotally mounted member, said bracket adopted for drivingly engaging said shift finger to pivot said shift finger on said shaft, whereby said shift finger engages said selected shifter fork.

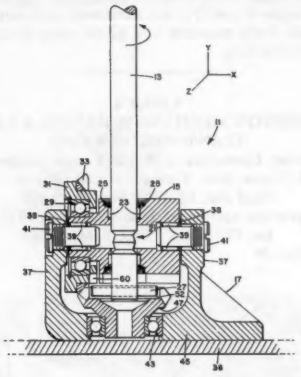
4,259,878

HAND CONTROL MECHANISM

John F. Anderson, Cuba City, Wis., assignor to Deere & Company, Moline, Ill.

Filed Oct. 29, 1979, Ser. No. 89,280
Int. Cl.³ G05G 7/00
U.S. Cl. 74—491 **8 Claims**

1. A handled lever mechanism to receive alternative modes of input to derive a single mode of output communicated to linking assembly, comprising;
- (a) a support mount;
- (b) a housing rotatably mounted to said support mount;
- (c) a lever partially mounted within said housing and mounted therein such that said lever can experience longitudinal motion and rotate about said lever's longitudinal axis, said lever to be mounted to said housing such that said lever can cause said housing to rotate with respect to said support mount;
- (d) first means rotatably mounted to said housing for providing a means of communicating motion of said lever to said linking assembly;
- (e) second means to limit the longitudinal motion of said lever to a first and second lever position;
- (f) third means for translating said rotation of said lever about said lever's longitudinal axis to an arc motion of said first means when said lever is in said first position;
- (g) fourth means for allowing motion of said lever in an arc path to result in motion of said first means and said housing in an arced path when said lever is in a second position;
- (h) fifth means for not allowing said housing to rotate when said lever is in said first position.

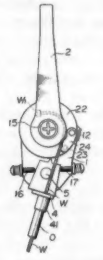


4,259,879

CONTROL DEVICE FOR A DERAILLEUR

Etsuyoshi Watarai, Sakai, Japan, assignor to Shimano Industrial Company Limited, Sakai, Japan

Filed May 29, 1979, Ser. No. 42,957
Claims priority, application Japan, Jun. 2, 1978, 53-66968
Int. Cl.³ F16C 1/22
U.S. Cl. 74—501.5 R **4 Claims**



1. A control device for removing the effect of changes in the length of a control wire which operates a derailleur having a return spring, said control device comprising:
- (a) a fixing member having a lever shaft;
- (b) a control lever for operating said derailleur, said control lever being rotatably supported to said lever shaft and connected with an end of said control wire;
- (c) a positioning plate rotatably supported to said lever shaft;
- (d) resistance applying means for applying rotational resistance to said positioning plate to cause said positioning plate to resist rotating with respect to one of said fixing member and lever, said positioning plate being made freely rotatable with respect to the other of said fixing member and lever, said rotational resistance being greater than the strength of said return spring; and
- (e) an actuator contacting with said positioning plate to control said free rotation thereof, said actuator being

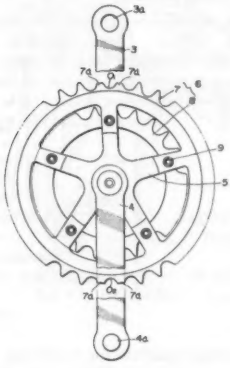
movable in accordance with the tension in said wire such that when said tension is equal to or greater than a predetermined value said actuator restrains said positioning plate from free rotation with respect to said other of said fixing member and lever, and when the tension in said wire is less than said predetermined value said actuator allows said positioning plate to freely rotate to permit automatic adjustment of a change in length of said control wire upon rotation of said lever.

4,259,880

MULTI-STAGE GEAR CRANK FOR A BICYCLE

Tadashi Ueno, Sakai, Japan, assignor to Shimano Industrial Company, Limited, Osaka, Japan

Filed Dec. 8, 1978, Ser. No. 968,093
Claims priority, application Japan, Dec. 16, 1977, 52-152238
Int. Cl.³ G05G *1/14*
U.S. Cl. 74—594.2 **7 Claims**



1. A multi-stage gear crank for a bicycle, comprising a crank shaft, a pair of crank arms mounted to both axial ends of said crank shaft, and at least one larger diameter gear and at least one smaller diameter gear, both of said gears being mounted at the side of one of said crank arms, whereby said crank arms overlap said gears, said gears having a plurality of teeth for meshing with a driving chain respectively, said crank arms defining two switching points on said larger diameter gear circumference at the points of overlap when said crank arms are substantially vertical, wherein only a minority of said teeth nearest each of said switching points has chain detaching means to allow said chain to readily leave said teeth and wherein the remaining teeth do not include chain detaching means to allow said chain to become readily detached, whereby said chain is switched from said larger diameter gear to the smaller diameter gear at the time said crank arms are substantially vertical and said chain detaching means enables said chain to readily leave said teeth.

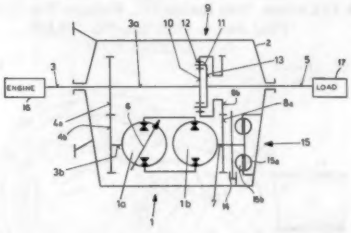
4,259,881

HYDROMECHANICAL LOAD-SPLITTING DRIVE

Michael Meyerle, Meckenbeuren-Lochbrücke, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

Filed Dec. 15, 1978, Ser. No. 969,948
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1977, 2758660
Int. Cl.³ F16H *47/04*
U.S. Cl. 74—687 **9 Claims**

1. A hydromechanical drive comprising:
an input shaft;
an output shaft;
a hydrostatic transmission having an input side connected to said input shaft and an output side and comprising a pair of hydraulically interconnected hydraulic machines one of which is of variable volume to vary the transmission ratio between said input and output sides;
a gear-type summing transmission having one input element connected to said output side of said hydrostatic transmission, another input element connected to said input shaft, and an output element connected to said output shaft; and



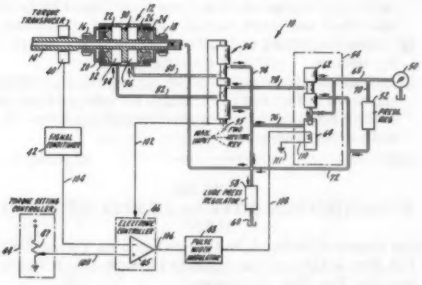
means including a hydrostatic brake connected to said output side of said hydrostatic transmission for retarding said output side with a force generally proportional to the rotation speed thereof and thereby proportionally reducing the load on said hydrostatic transmission as the rotation speed of said output shaft increases.

4,259,882

ELECTRONIC SHIFT CONTROL

Alan L. Miller, Mount Prospect, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jan. 3, 1978, Ser. No. 866,431
Int. Cl.³ B60K *41/02*
U.S. Cl. 74—862 **15 Claims**



1. A control system for controlling an element engageable to establish a gear ratio in a gear set, a torque transmitting shaft in said gear set, a torque sensor associated with said shaft and adapted to provide a signal responsive to torque transmitted by said shaft, acceleration signal means producing a signal responsive to a desired acceleration rate, an electronic controller connected to said acceleration signal means and said torque sensor, said electronic controller including an amplifier stage having logic means responsive to the gear ratio established to provide a signal representative of the gear ratio established, transducer means responsive to vehicle weight and connected to provide a signal thereto representative of vehicle weight to said controller, a control mechanism for controlling engagement of said engageable element, means connecting said controller and control mechanism whereby establishment of said ratio is controlled by said controller in accordance with the torque value in said shaft and said desired acceleration rate, whereby said acceleration rate will not exceed the limit established by said acceleration signal means, wherein said controller includes a comparator connected to said acceleration signal

means and said torque sensor, a pulse width modulating means connected to said comparator and said hydraulic valve, whereby said comparator supplies a signal to said pulse width modulating means which varies with torque of said shaft and said acceleration signal.

4,259,883

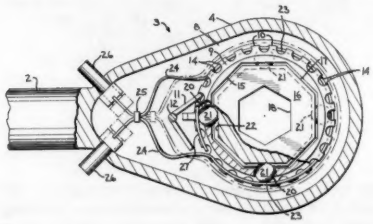
DROP-OUT SOCKET WRENCH

Mark E. Carlson, 1610 Becher Dr., Wausau, Wis. 54401

Filed Jan. 4, 1980, Ser. No. 109,569

Int. Cl.³ B25B *13/46*

U.S. Cl. 81—62 **10 Claims**



1. A socket wrench comprising:

(a) a handle,

(b) a head portion on said handle,

(c) a ring-like ratchet wheel disposed for rotation on said head portion and with said ratchet wheel having teeth on its outer periphery and a non-circular inner surface,

(d) pawl means for engaging said teeth,

(e) an interchangeable annular socket insert having a central opening and having an outer peripheral wall fitting within said inner surface of said ratchet wheel,

(f) a plurality of ball bearings operatively connected between said ratchet wheel and said socket insert for holding said wheel and insert in axially assembled relationship,

(g) means for locking said ball bearings in wheel-insert holding position,

(h) and quick-release means connected to unlock said locking means so that said ball bearings are released from their holding position and said socket insert freely drops out of said ratchet wheel.

4,259,884

APPARATUS FOR INTERNALLY PEELING METAL TUBES

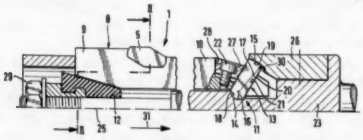
Heinz Hartkopf, Solingen, and Ulrich Lomberg, Velbert, both of Fed. Rep. of Germany, assignors to Th. Kieserling & Albrecht, Solingen, Fed. Rep. of Germany

Filed Sep. 10, 1979, Ser. No. 73,954

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1978, 2839155

Int. Cl.³ B23B *41/06, 51/00*

U.S. Cl. 82—1.5 **10 Claims**



1. Apparatus for internally peeling tubes comprising: a peeling head having a longitudinal axis about which said head is rotatable, an elongated cutter holder extending generally parallel to said axis and having opposite end portions, a cutter mounted on said holder, one of said end portions being pivotally connected to said head at a pivot connection for swinging motion of said holder to move said cutter toward or away from said axis, and adjustment means for adjusting both of said end portions inwardly and outwardly relative to said axis.

4,259,885

FACING AND JOURNAL TURNING MACHINE

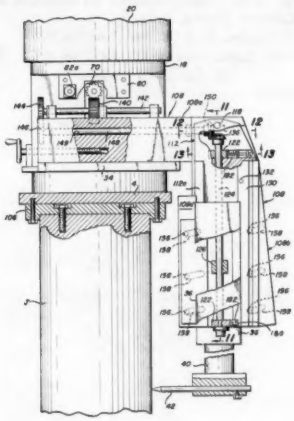
Carl L. Lindhag, International Falls, Minn., assignor to Boise Cascade Corporation, Boise, Id.

Division of Ser. No. 893,429, Apr. 4, 1978, Pat. No. 4,186,630.

This application Jun. 29, 1979, Ser. No. 53,270

Int. Cl.³ B23B *3/26, 5/04*

U.S. Cl. 82—4 R **3 Claims**



1. Portable turning apparatus for machining the peripheral surface of a generally cylindrical workpiece, comprising

(a) a stationary base plate (**6**) adapted for connection with an end portion of the workpiece, said base plate extending generally normal to the longitudinal axis of said workpiece;

(b) a stationary shaft (**14**) normal to and connected at one end with said base plate, said shaft being generally colinear with the workpiece longitudinal axis;

(c) a hollow drum (**2**) journalled for rotation concentrically about said shaft;

(d) a cover member (**20**) connected with the other end of said shaft for closing the end of said drum adjacent thereto;

(e) cutting means including a tool holder (**40**), and a cutting tool (**42**) carried by said tool holder;

(f) guide means connecting said tool holder for reciprocation relative to said drum in a direction generally parallel with and spaced from the axis of rotation of said drum;

(g) drive means (**24**) for rotating said drum about said shaft; and

(h) means responsive to the rotation of said drum about said shaft for linearly displacing said tool holder relative to said guide means, whereby when the base plate is mounted on the end surface of a cylindrical workpiece, the tool holder is rotated about the workpiece and is linearly displaced to effect machining of the outer peripheral cylindrical surface of the workpiece by the cutting tool, said means for linearly displacing said tool holder relative to said guide means comprising

(1) an L-shaped support member (**108**) having a first arm (**108***a*) portion connected with said drum and being contained in a plane normal to the axis thereof, said support member having a second arm portion (**108***b*) which extends generally parallel with the axis of said drum, said second arm portion being adapted to extend

adjacent the outer peripheral cylindrical surface of the workpiece;

(2) means mounting said guide means on, and extending generally parallel with, said second arm portion, said mounting means including a mounting plate pivotally connected at one end with said L-shaped support member adjacent the juncture between said first and second arm portions for pivotal movement about a pivot axis normal to said support member, thereby to permit said mounting plate and said guide means to be pivoted to an angularly arranged position in which the axis of said guide means is inclined at a small angle relative to a line passing through said pivot axis parallel with the axis of rotation of said drum, and means for fastening said mounting plate in said angularly arranged position relative to said second arm portion;

(3) a drive screw (**124**) rotatably connected with, and extending generally parallel with, said second arm portion;

(4) means (**126**) threadably connecting said tool holder with said drive screw; and

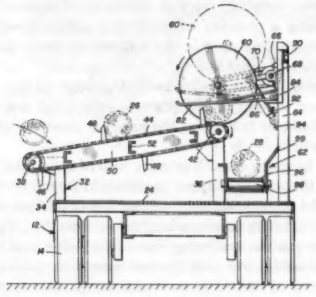
(5) means responsive to the rotation of said drum relative to said shaft for driving said drive screw, whereby said cutting tool is operable to machine the outer peripheral surface of a tapered workpiece.

4,259,886

WOOD CUTTER AND LOADER

Bobby P. Seid, P.O. Box 235, and Laurie P. Hopper, P.O. Box 25, both of Claremont, Va. 23899

Filed Jun. 20, 1979, Ser. No. 50,300
Int. Cl.³ B27B *5/02*
U.S. Cl. 83—425.2 **11 Claims**



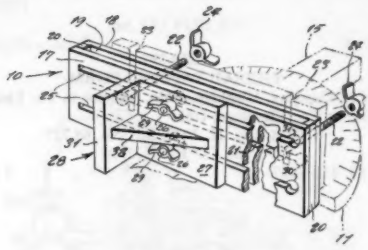
1. A wood cutter and loader comprising a supporting framework, a plurality of spaced and aligned circular saws supported from said framework, a plurality of conveyor chains supported from said framework, means on said chains for engaging a tree length log and moving it toward the saws when the chains are driven, said chains being endless and entrained around end sprockets, one of said sprockets being disposed immediately adjacent the lowest peripheral point of an associated saw, each of said saws including a spring biased log engaging latch extending beyond the periphery of the saw to engage the top surface area of an approaching tree length log to stabilize the log and prevent kickback, loading conveying means supported on said framework at an elevation below the sprocket adjacent the lowest point of the saw to enable cut length logs to free fall onto the loading conveyor means immediately after the saw has cut through the tree length log thereby reducing binding and friction on the saws, and means driving said chains, saws and loading conveying means.

4,259,887

TABLE SAW MITRE GAUGE EXTENSION

Glenn L. Dean, P.O. Box 297, North Platte, Nebr. 69101

Filed Aug. 6, 1979, Ser. No. 63,991
Int. Cl.³ B27B *27/08*
U.S. Cl. 83—437 **2 Claims**



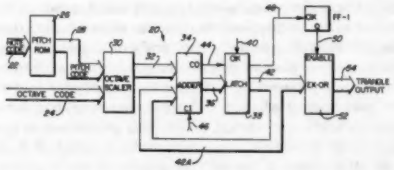
1. A table saw mitre gauge extension, comprising in combination, a pair of parallel, spaced apart front and back plates affixed together by spacers between opposite ends thereof, a pair of rearwardly extending bolts through said rear plate attaching said extension to a mitre gauge, and a pair of forwardly extending bolts through said front plate attaching a rip fence thereto; said pair of bolts through said rear plate extending through an elongated, single slot thereof, said pair of bolts through said front plate extending through a pair of parallel, elongated slots in said front plate, said slot of said rear plate being parallel to said slots of said front plate, the heads of all said bolts being in a space formed between said plates, and threaded ends of said bolts extending outwardly from said extension being fitted with adjustable wing nuts; said extension accordingly being slidably adjusted on said mitre gauge, and said rip fence being slidably adjusted on said extension.

4,259,888

TONE GENERATION SYSTEM EMPLOYING TRIANGULAR WAVES

Glenn M. Gross, Chicago, Ill., assignor to Norlin Industries, Inc., Deerfield, Ill.

Filed Dec. 6, 1979, Ser. No. 100,973
Int. Cl.³ G10H *1/04, 1/08*
U.S. Cl. 84—1.22 **17 Claims**



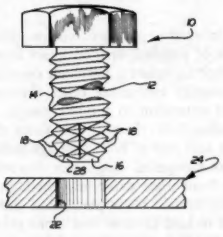
1. In a triangular waveform generator of the type including means for representing a musical scale value, means for adding said musical scale value repetitively to produce an ascending series of quantities, means for periodically reversing the direction of change of said quantities to produce an alternately ascending and descending series thereof, and means responsive to said alternately ascending and descending series of quantities to produce a sequence of analog wave amplitudes each of which is a function of a respective one of said quantities; an improvement for producing asymmetry between the alternate ascending and descending phases of the resulting waveform, comprising:

means for multiplying said musical scale value before it reaches said adding means; and

control means rendering said multiplying means effective or ineffective to alter the value reaching said adding means;

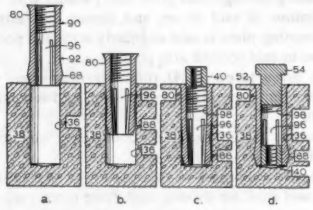
said control means being responsive to said reversing means to render said multiplying means effective during one of said alternate waveform phases and ineffective during the other of said alternate waveform phases.

4,259,889
THREAD TAPPING FORM
Terry D. Capuano, Hinckley, Ohio, assignor to The Lamson & Sessions Co., Cleveland, Ohio
Filed Aug. 22, 1979, Ser. No. 68,727
Int. Cl.³ F16B *25/00*
U.S. Cl. 411—417 **7 Claims**



1. A thread tapping form for use in forming an internal thread convolution in a member, said thread tapping form comprising an axially extending shank, said shank having a circular cross sectional configuration in a radial plane extending perpendicular to a longitudinal central axis of said shank, and a plurality of thread forming projections disposed on said shank, each one of said thread forming projections including a leading section which parts the material of the member to initiate formation of the flanks of the internal thread convolution and a side section which presses against the flanks of the internal thread convolution, said leading section of said one of said projections having a generally tetrahedronal configuration with a triangular base disposed on said shank, a pair of triangular side surfaces disposed on opposite sides of said triangular base and extending radially outwardly of said shank from said base to a crest portion of said one projection, said triangular side surfaces intersecting to form a leading edge of said projection, said leading edge of said projection extending from said shank to said crest portion of said one projection to part the material of the member and initiate the forming of flank surfaces of an internal thread convolution in the member, said triangular side surfaces of said leading section flaring outwardly from said leading edge to said side section to enable said triangular side surfaces to press the flank surfaces of the internal thread convolution apart with a wedging action, said side section of said one projection including a pair of generally rectangular side surfaces which extend at an acute angle relative to each other from base edges at said shank to outer edges at said crest portion of said one projection, said base edges of said side surfaces extending parallel to each other and to said outer edges, said rectangular side surfaces of said side section having leading edge portions which intersect said triangular side surfaces of said leading section at trailing edge portions of said triangular side surfaces, said rectangular side surfaces of said side section being disposed in flat planes which intersect at an acute angle which is equal to an acute angle between flank surfaces of adjacent turns of the internal thread convolution, said side section of said one projection having a crest surface which extends between said outer edges of said rectangular side surfaces to form a root portion of the internal thread.

4,259,890
REMOVABLE ANCHOR ASSEMBLIES
James H. Walsh, 624 Main St., Longmont, Colo. 80501
Filed Jan. 15, 1979, Ser. No. 3,370
Int. Cl.³ F16B *13/04*
U.S. Cl. 411—57 **16 Claims**

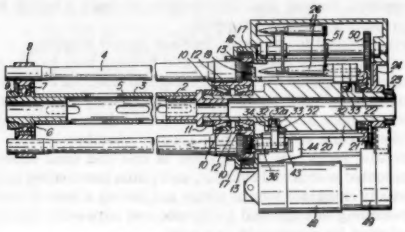


1. A removable anchor assembly comprising:
an elongated hollow tube having integral upper and lower portions with at least the lower portion exhibiting resilience to lateral deflection of segments of the walls thereof and the upper portion having means for attaching a separate member;
a diameter of said lower portion normally changing progressively from the junction with said upper portion to the lower end of said lower portion, and said upper portion having predetermined internal and external diameters;
means defining a plurality of successive circumferentially-spaced longitudinal slots in the wall of said lower portion that define said segments;
means defining at least one lateral facing ridge on the external surface of said lower portion, said ridge having a normal diameter related to the external diameter of said upper portion;
a rigid plug having a smooth exterior wall of a diameter to be movable through said upper portion and functionally the same as the interior diameter of said lower portion at said junction, said plug having a length less than the length of said lower portion and being insertable within said lower portion to wedge the walls thereof outwardly and expand the diameter of said ridge to an amount greater than said predetermined external diameter;
and coupling means included within said plug for permitting engagement therewith to enable withdrawal of said plug from out of said lower portion and consequent contraction of the diameter of said ridge to an amount no greater than approximately the external diameter of said upper portion.

4,259,891
MULTI-BARREL ROTARY MACHINE GUN
Shlomo Rosenzweig, 24 Hatomer St., Ramat Hasharon, Israel
Filed Apr. 10, 1979, Ser. No. 28,647
Claims priority, application Israel, Apr. 14, 1978, 54510
Int. Cl.³ F41D *7/02*
U.S. Cl. 89—12 **7 Claims**

1. A multi-barrel rotary machine gun comprising a stationary internal shaft, a drum mounted for rotation about said shaft, a plurality of barrels carried by said drum for rotation

therewith, a bolt assembly and locking mechanism associated with each barrel, and means for dictating the movement of



each bolt assembly and its operation, said means comprising a slot in said drum and a cam groove on said shaft.

4,259,892

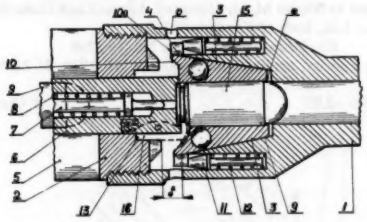
CARTRIDGE-HOLDER

Leonard Witt, and Mary Witt, both of 1923 N. Howe St.-2R, Chicago, Ill. 60614

Filed Jan. 31, 1979, Ser. No. 8,097

Int. Cl.³ F41F *17/08*

U.S. Cl. 89—16 **1 Claim**



1. A firearm for firing cartridges comprising a receiver having a breech end, a barrel attached to said receiver at said breech end, said barrel having a cone hole at the breech end thereof, a cartridge holder located in said cone hole, and a bolt movable in said receiver so as to contact said cartridge-holder wherein the improvement comprises:

(a) said cartridge-holder being formed of a plurality segments held by pins and springs in the cone hole at the breech end of the barrel, said springs biasing the cartridge-holder segments partially out of said cone hole,

(b) balls in said cartridge-holder segments to cause the cartridge-holder segments to fall into the right end positions, and

(c) bumpers on said receiver and said cartridge-holder segments which strike against each other causing said segments to expand,

whereby said bolt moving forward in said receiver, takes a cartridge, moves it into the cartridge-holder, and contacts said cartridge-holder; under the pressure of contact by the bolt, the cartridge-holder, with the cartridge therein, moves into said cone hole against the bias of said springs, jamming said cartridge-holder segments tightly around the cartridge; upon firing the cartridge, the cartridge, the cartridge-holder, and said bolt move back until the bumpers strike against each other, expanding the segments of the cartridge-holder, causing release of the cartridge for extraction, and ejection.

4,259,893

FLUID PRESSURE OPERATED SERVOMOTOR

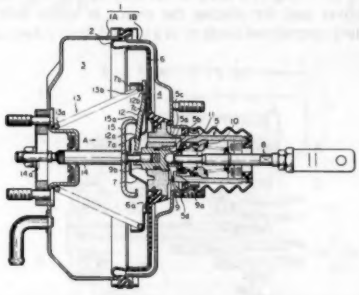
Hiromi Ando, Tokyo; Kiyoshi Tateoka, Fujisawa, and Yoshihiro Hayashida, Chigasaki, all of Japan, assignors to Tokico Ltd., Kawasaki, Japan

Filed Nov. 15, 1978, Ser. No. 961,022

Claims priority, application Japan, Nov. 19, 1977, 52-155957[U]

Int. Cl.³ F15B *9/10*

U.S. Cl. 91—369 B **4 Claims**



1. A fluid pressure operated servomotor comprising:

a main body;

a diaphragm and a power piston coacting to divide the interior of said main body into front and rear airtight chambers;

a valve mechanism positioned in said power piston for controlling the pressure in at least one of said chambers;

an input shaft connected to said valve mechanism for actuating said valve mechanism;

an output rod means in said front chamber for transmitting the force of said power piston;

a retaining plate mounted on the surface of said power piston facing said front chamber and having cut-outs therein extending radially outwardly;

a plurality of reaction levers extending through respective cut-outs for being positioned on said power piston with the extremities of the radially inner end towards said rear chamber from said retaining plate and intermediate portions of the radially inner ends exposed toward said front chamber and the radially outer ends exposed toward said front chamber from said retaining plate, said retaining plate having fulcrums on a side toward the front chamber engaged by the respective reaction levers and about which said reaction levers pivot between one position in which the intermediate portions of the radially inner ends are engaged only with said output rod means for transmitting an output force from said power piston to said output rod means and a second position in which the extremities of the inner ends are engaged with said input rod for transmitting a reaction force to said input shaft and

a return spring in said front chamber engaging the radially outer ends of said levers for biasing said power piston rearwardly.

4,259,894

HYDROSTATIC MOTOR

Stefanica Arama; Stefan Daschievici; Cezar Ferat, and Feodor Turcescu, all of Braila, Romania, assignors to Institul de Cercetări si Proiectari pentru Utulaje de Constructii de Drumuri (I.C.PU.C.), Braila, Romania

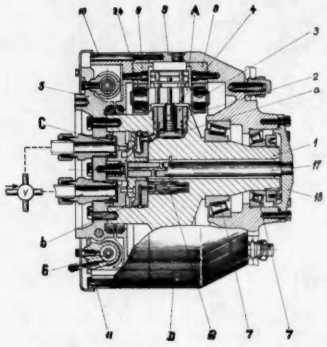
Filed Aug. 15, 1978, Ser. No. 933,915

Int. Cl.³ F01B *13/06*

U.S. Cl. 91—487 **8 Claims**

1. A hydrostatic motor including a rotor, a stator, radially

arranged hydraulic cylinders located in the stator, first, tubular pistons housed in the cylinders, second pistons located within said first pistons, said first pistons constituting working cylinders for said second pistons, the first pistons each having a closed end with an outer surface having an area substantially greater than that of the corresponding end of the second piston therein, duct means arranged in the stator for the supply of pressure fluid to the first and second pistons, a drain duct circuit, a crosshead for each set of first and second pistons, the crossheads being displacable by said second pistons when the motor is operating in a first, lower duty operational mode, a change-over unit for placing the motor in either said first, lower duty operational mode or in a second, heavy duty operational mode, said first piston functioning when the motor is operating in said second operational mode, a fluid distribution unit housed in the stator and including a distributor having a rotary part, and means for driving the rotary part of the distributor in synchronism with the rotor, said change-over unit comprising a valve which in the second operational mode delivers fluid via ducting to the outer surface of the first pistons for driving them and which in the first operational mode interrupts pressure fluid flow to the said outer surfaces of the first pistons while simultaneously causing fluid communication between said outer surfaces of the first pistons and the drain circuit and causing pressure fluid flow to the said corresponding ends of the second pistons.

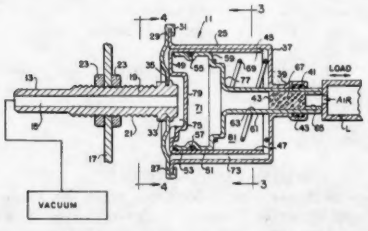


4,259,895

VACUUM MOTOR

Roland G. Owens, 10850 Hull Rd., Hamburg, Mich. 48139

Filed Jun. 11, 1979, Ser. No. 47,035
Int. Cl.[3] F01B *29/02;* F15B *21/04;* F16J *11/04*
U.S. Cl. 92—78 **12 Claims**



1. A vacuum motor comprising a cylindrical housing having a bore and an axially apertured mount plate at one end and an end wall at its other end terminating in an axially out-turned guide tube;

an exteriorly threaded stem having an axial bore adapted for connection to an intermittenly actuated vacuum source;

said stem at one end projecting through said mount plate and secured thereto, and intermediate its ends adapted for projection through a support;

means adapted for securing the stem to said support;

a cylinder snugly nested within said housing bore having an open end spaced from the housing end wall, the other end of said cylinder being closed and bearing against said mount plate and being axially recessed defining with said mount plate and stem a first vacuum chamber;

a hollow reciprocal piston open at one end (and sealed) mounted within said cylinder, said piston terminating in an axially elongated tubular piston rod having a bore slidably extending through said guide tube and outwardly thereof adapted for connection to a load;

means for sealing said piston within said cylinder;

the interior of said piston defining with said cylinder and said closed other end an air power chamber communicating with the piston rod bore and with atmosphere;

said piston defining with said housing end wall a second vacuum chamber;

and spring means within said second vacuum chamber interposed between said housing end wall and piston normally biasing said piston into a retracted position;

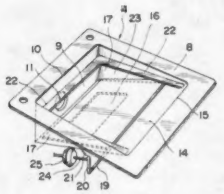
said housing being formed with an internal groove along its length defining with said cylinder a vacuum passage interconnecting said vacuum chambers.

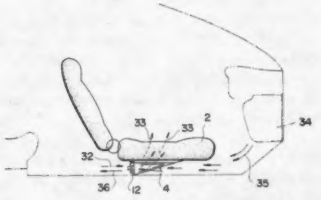
4,259,896

APPARATUS TO CONTROL THE AIR FLOW IN AN AUTOMOBILE

Kazuo Hayashi, and Fujio Takahashi, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited and Ikeda Bussan Co., Ltd., both of Kanagawa, Japan

Filed Jan. 30, 1980, Ser. No. 116,796
Claims priority, application Japan, Jan. 31, 1979, 54-9109
Int. Cl.[3] A47C *7/74;* B60H *1/00*
U.S. Cl. 98—2.03 **7 Claims**





1. An apparatus to control the air flow in an automobile comprising;

a box which is provided beneath a seat and which has a rear opening, a front opening and an upper opening;

a fan of which the rotation can be reversed and which is mounted to the box in such a way as to blow air into and blows air out of the box;

a switching plate which is provided in the box in such a way as to selectively close either one of the front opening and the upper opening;

a means to drive the switching plate so as to close selectively either one of the front opening and the upper opening in synchronism with the switching of the rotation of the fan;

thereby the air is forcibly passed upwards through the seat or the hot air from a heater or the cold air from a cooler provided in front of the seat is forcibly sent rearwards through the box.

4,259,897

DEVICE FOR RECEPTION OR DELIVERY OF GASES

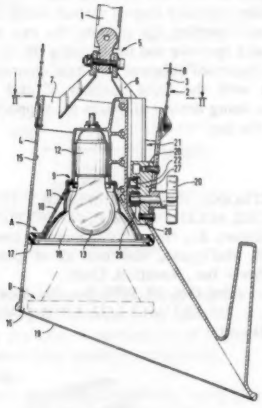
Bill P. P. Nederman, Halalid 3, Helsingborg, Sweden

Filed Dec. 15, 1978, Ser. No. 970,092

Claims priority, application Sweden, Dec. 16, 1977, 7714341

Int. Cl.³ B08B *15/02;* **F24F** *07/04*

U.S. Cl. 98—40 DL **8 Claims**



1. An apparatus for conveying gases as well as illuminating a specific area, said apparatus comprising:

a variable volume gas conveying pipe having at least one free end, said free end positionable by support means in said area;

a cap having a small end connected to said free end of said pipe and which widens to a cross section larger than said pipe;

lamp means for illuminating said area, said lamp means including a lamp housing, said housing having a cross section substantially similar to the free end of said pipe; and

means for adjustably mounting said lamp means in said free end of said pipe, said mounting means including means for externally adjusting the position of said lamp means at least between two positions, in one of which at least a portion of the lamp housing sealingly blocks the small end of said cap and prevents the flow of gas therethrough, and in the other of which the lamp housing unblocks the small end of said cap and permits the flow of gas therethrough, said mounting means locating said lamp means wholly within said cap in either of said positions.

4,259,898

CEILING AIR OUTLET FOR CLIMATE CONTROL SYSTEM

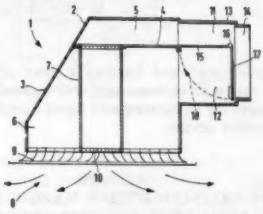
Wolfgang Finkelstein, Neukirchen-Vluyn; Hans Riegel, Geldern, and Gerhard Kurzhals, Duisburg, all of Fed. Rep. of Germany, assignors to Gebrüder Trox, Gesellschaft mit beschrankter Haftung, Neukirchen-Vluyn, Fed. Rep. of Germany

Filed Oct. 1, 1979, Ser. No. 80,230

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1978, 2842924

Int. Cl.³ F24F *13/02*

U.S. Cl. 98—40 D **6 Claims**



1. A ceiling air outlet for a climate control system, comprising:

a housing having an outlet surface;

a first outflow channel in said housing for receiving air and delivering it in a substantially horizontal direction from said outlet surface;

a second outflow channel in said housing for receiving air and delivering it in a substantially vertically downward direction from said outlet surface;

said first and second outflow channels having at their inlet ends a common air supply channel; and,

damper means mounted in the connecting region of said first and second outflow channels and said supply channel for automatically regulating the air flow into one of said outflow channels in response to the volume flow of air, said damper means closing said one of said outflow channels in response to a lower volume flow of air and opening said one of said outflow channels in response to a higher volume flow of air, whereby the speed of the air delivered from said outlet surface is maintained at an adequate level.

4,259,899

DEVICE FOR RECLAIMING PAINT OR LIKE MATERIAL, WHICH DURING THE SPRAYING THEREOF DOES NOT LAND ON THE OBJECT TO BE TREATED

Jan Bovenkamp, 12, Midlansdyk, Goënga, and Jannes A. Melching, 16, Kasteelstraat, Oudkarspel, both of Netherlands

Filed Nov. 30, 1978, Ser. No. 964,864

Int. Cl.³ B05C *15/00*

U.S. Cl. 98—115 SB **4 Claims**

1. An apparatus for reclaiming sprayed paint which does not land on an article to be painted, said apparatus comprising:

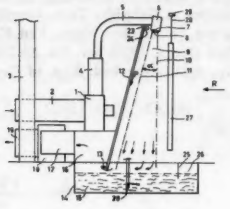
at least one fan means for generating an air stream;

at least one inclined reclaiming wall, located past the article to be painted in the direction of sprayed paint, said reclaiming wall is inclined toward said article to be painted at an angle of between 10° and 20° with the vertical plane;

a distribution box means, connected to said fan means, for directing said air stream in a narrow stream between said wall and said article, said narrow stream defined by two planes forming an acute angle of between 10° and 20° with each other, one of said planes substantially parallel to said reclaiming wall and the other of said planes substantially vertical, said narrow stream located a distance from said wall;

a liquid tank with liquid therein, located substantially under said reclaiming wall;

a distribution device means for applying said liquid to said



reclaiming wall and forming a sheet of liquid flowing down said wall between said wall and said air stream;

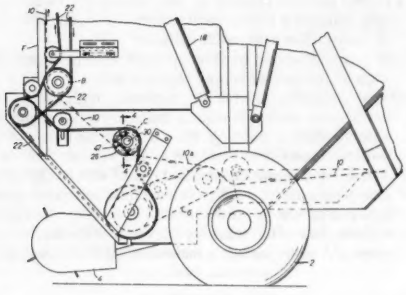
pump means for circulating said liquid from said tank to said distribution device.

4,259,900

ROTARY BALING MACHINE HAVING DUAL BELT DRIVING MEANS WITH OVERRUNNING SPROCKET

Hallis D. Campbell; Donald E. Burrough, and Dean E. Seefeld, all of West Bend, Wis., assignors to Gehl Company, West Bend, Wis.

Filed Nov. 19, 1979, Ser. No. 95,401
Int. Cl.[3] B30B *5/04*
U.S. Cl. 100—88 **4 Claims**



1. A machine for forming a cylindrical bale of cut crop material comprising, a mobile frame, a series of rollers mounted in and extending transversely across said frame, endless belt means trained around and supported on said rollers and defining a bale forming chamber wherein the belt means is continually wrapped around the bale being formed, whereby said belt means drivingly rotates said rollers, second means operatively connected with said rollers for also rotatably driving said rollers, said second means including an overrunning member on at least one of said rollers, whereby when said member overruns, said belt means can drive said one of said rollers independently of said second means.

4,259,901

GUIDE FOR IMPRINTING BOTTLE TOPS

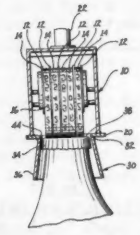
Leonard A. Kidd, 4202 N. Romero Rd, #23, Tucson, Ariz. 85705

Filed Jan. 31, 1979, Ser. No. 8,081
Int. Cl.[3] B41F *17/00*
U.S. Cl. 101—42 **1 Claim**

1. A manually transportable apparatus for serially marking the price upon the cap of each of a plurality of capped bottles by relative positional movement between said apparatus and the bottles, said apparatus comprising in combination:

(a) a price marking stamping device for marking the price, said device including an imprinter settable to reflect the price of the bottle to be marked and which imprinter is relocatable with respect to said device to a fixed position to which said imprinter can extend for imprinting coincident with the operation of imprinting the price;

(b) an apertured base member for providing the sole support for said device upon the cap during imprinting of the price upon the cap, said base member including an aperture for defining the area within which said imprinter will print the price, said base member being mounted upon said



device at a location which will permit penetration of said imprinter through said aperture upon relocation of said imprinter to the fixed position; and

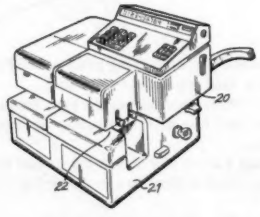
(c) a frusto conically shaped shroud means depending from said base member for guiding the cap into registration with said aperture and for locating the surface of the cap to be imprinted adjacent said base member and commensurate with the fixed position of said imprinter, said shroud being devoid of means for supporting said device upon the cap.

4,259,902

ELECTRONIC POSTAGE METER WITH POWER FAILURE ACCOUNTING PROTECTION SYSTEM

Alton B. Eckert, Jr., Norwalk; Lynnwood Lowe, Darien, and Robert B. McFiggans, Stamford, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 30, 1979, Ser. No. 89,423
Int. Cl.[3] B41J *1/22;* **G07B** *17/02*
U.S. Cl. 101—91 **11 Claims**



1. In a postage meter having a settable printing mechanism, a drive input mounted to receive mechanical input energy for driving said printing mechanism through printing cycles, said drive input having a home position that it assumes following each printing cycle, and an electronic accounting system including a register for storing data related to postage printed thereby, said accounting system being coupled to said printing mechanism for storing in said register a value corresponding to the setting of said printing mechanism for each printing cycle; the improvement comprising a mechanical latch mounted to have a first stable position blocking said drive input from initial movement away from said home position, and a second stable position in which said drive input is unblocked to be continu-

ously operable to drive said printing mechanism through a printing cycle, said drive input having means setting said mechanical latch at a determined degree of movement following initiation of a printing cycle, and further comprising means responsive to storage in said register during a printing cycle of the setting value of said printing mechanism for setting said latch to said second stable position.

4,259,903

CIRCUIT ARRANGEMENT FOR SYNCHRONIZING THE TIMES OF OCCURRENCE OF THE PRINT HAMMER IMPACT WITH THE ARRIVAL OF THE PRINT TYPE AT THE PRINT POSITION

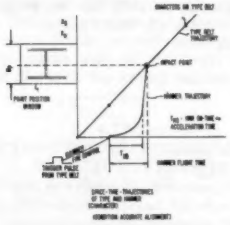
Klaus Arendt, Holzgerlingen; Werner Hasler, Schönaich, and Karl-Heinz Schaller, Herrenberg, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 19, 1979, Ser. No. 95,808

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1978, 2338074; Oct. 11, 1978, 2360323; Oct. 11, 1978, 2848786

Int. Cl.[3] B41J 7/92

U.S. Cl. 101—93.03 12 Claims



1. A circuit arrangement for synchronizing the impact time of a plurality of magnet operated print hammers in an on-the-fly printer with the time of occurrence of a print type to be printed at a desired print position comprising

a supply voltage,

pulse generator means for supplying firing pulses to said hammers,

control logic responsive to said firing pulses for operating said hammers,

a voltage-controlled delay element interconnecting said pulse generator means to said control logic,

means for detecting and determining deviations of operating parameters including said supply voltage to and the temperature of the magnets of said print hammers; and

means for combining said values determined by said detecting and determining means with a dynamic exponentially dependent upon time control value to derive a control voltage in accordance with the relation

$$\Delta DLY = -K_1\Delta T + K_2\Delta T \cdot \Delta V + K_3\Delta V - K_6\Delta A$$

where

ΔDLY is said control voltage

ΔT is the temperature of the print hammer magnets

ΔV is the voltage of the print hammer magnets

ΔA is a value dependent upon the print activity,

K_1, K_2, K_3, and K_6 are device specific coefficients,

said derived control voltage being applied to said voltage-controlled delay element.

4,259,904

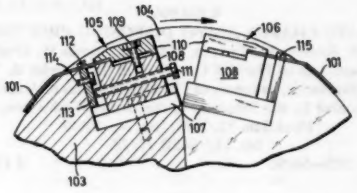
ALIGNMENT SYSTEM FOR OFFSET PRINTING PRESSES

Heinz Metje, Mittel Str. 21, 5653 Leichlingen, Fed. Rep. of Germany

Continuation of Ser. No. 818,388, Jul. 25, 1977, abandoned. This application Jul. 23, 1979, Ser. No. 59,647

Int. Cl.[3] B41F 27/12

U.S. Cl. 101—415.1 8 Claims



1. In an alignment system for the positioning of a printing plate on offset printing presses, and including a stamping machine for the punching out of register holes in the printing plate and a related mask, a bending device for the printing plate, and a printing press having a printing roll across which a fastening channel is formed, the improvement comprising:

at least two stamping pegs on said stamping machine operative to punch rectangular register holes having corresponding linear edges in linear alignment with one another along a first straight line spaced inwardly from the edge at an end of a printing plate;

a pair of side chocks on said stamping machine, each side chock having a linear plate striking surface for contacting a side edge location of said plate;

said linear plate striking surfaces of said side chocks lying along a second straight line which is perpendicular to said first straight line, and the distance between the midpoints of said side chock surfaces being equal to the circumference of said printing roll reduced by the width of said fastening channel;

said bending device having rectangular register pins which match in spacing said register holes punched by said stamping pegs, the width of said register pins being an exact fit with the width of said register holes, and the length of said register pins being less than the length of said register holes to provide a gap between each end of each register pin and the confronting edge of the corresponding register hole;

said bending device being operative to bend said end of the printing plate along a bend line aligned with said first line and perpendicular to said second line; and

blocking means located in said fastening channel to define an abutment surface for contacting the printing plate at each said side edge location previously contacted by said plate striking surfaces of said side chocks in said stamping machine, so that alignment of the printing plate on the printing roll is not affected by irregularities in the edges of the printing plate.

4,259,905

WATERLESS PLANOGRAPHIC PRINTING PLATE WITH POLYSILOXANE COATING

Shigeo Abiko, and Tadami Kamaishi, both of Ohtsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jun. 12, 1979, Ser. No. 47,817

Claims priority, application Japan, Jun. 14, 1978, 53-70800

Int. Cl.[3] G03F 7/02

U.S. Cl. 101—467 15 Claims

1. A waterless planographic printing plate having toner image areas of ink receptivity and non-image areas of ink releasability, which plate comprises a substrate and an overly-

ing layer coated on the substrate, said overlying is predominantly comprised of a reaction product of 50 to 99% by weight of a polymeric material selected from the group consisting of phenol resins, 1, 2-polybutadiene or its derivatives and acrylate or methacrylate resins, said polymeric material having, on the average, at least two hydroxyl groups per molecule and exhibiting a high adhesion to the ink-receptive toner, and 1 to 50% by weight of an organopolysiloxane having hydroxyl end groups.

4,259,906

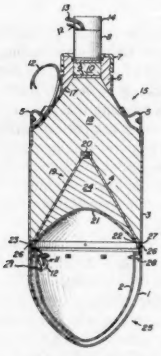
SHAPE CHARGE AGENT DISPOSING PROCESS

Robert E. Krauch, Jr., Towson, Md., and Thomas W. Tranberg, deceased, late of Harford County, Md. (by Harriet R. Tranberg, executrix), assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 12, 1979, Ser. No. 3,435

Int. Cl.[3] F42B *11/22*

U.S. Cl. 102—56 SC **4 Claims**



1. A munition component for penetrating a target and disposing a physiologically toxic agent therein comprising:

a casing,

a shaped charge explosive material positioned in said casing,

a cone-shaped liner positioned in said shaped charge explosive material, said liner being closed at its forward end by a paraboloid-shaped cap, which curves toward the apex of said liner and thereby forms a closed chamber in said liner for containing said agent, a physiologically toxic agent contained in said chamber; and joint means for attaching said liner to said casing.

4,259,907

ARRANGEMENT FOR THE TRANSFER OF CONVEYED ARTICLES BETWEEN INTERSECTING TRACKWAYS

Ludwig Schuck, Darmstadt-Arheiligen, Fed. Rep. of Germany, assignor to Carl Schenck Ag, Darmstadt, Fed. Rep. of Germany

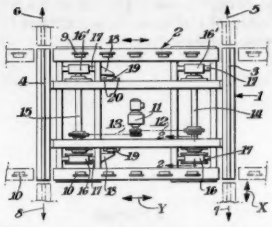
Filed May 3, 1979, Ser. No. 35,596

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1978, 2839339

Int. Cl.[3] E01B *13/00*

U.S. Cl. 104—48 **6 Claims**

1. An arrangement for the transfer of freight containers between two trackways intersecting each other at different conveying levels comprising eccentric cam means mounted on a first of the trackways, cam reaction surface means on a second of the trackways, the eccentric cam means bearing against the cam reaction surface means, the eccentric cam means incorporating roller bearing means for minimizing frictional resistance to operation of the eccentric cam means, and driving means connected to the eccentric cam means whereby the eccentric cam means is rotated to change the relative elevation between the two trackways in transferring the freight container from one trackway to the other, the roller bearing means has an outer race, the outer race having a double flange, the



cam reaction surface means being a short flat rail, and the outer race of the roller bearing means being disposed against the short rail with its double flanges engaged around it.

4,259,908

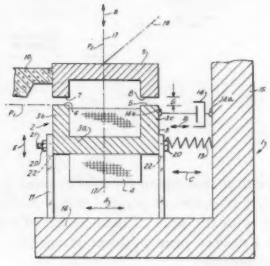
ELECTROMAGNETIC SUSPENSION VEHICLE

Jochen Feistkorn, Gröbenzell; Edgar Pohlmann; Walter Rothmayer, both of Munich; Peter Schwärzler, Fürstenfeldbruck; Günter Steinmetz, Grafing, and Peter Zander, Grossinzemoos, all of Fed. Rep. of Germany, assignors to Krauss-Maffei AG, Munich, Fed. Rep. of Germany

Filed Jul. 19, 1979, Ser. No. 59,053

Int. Cl.[3] B61B *13/08*

U.S. Cl. 104—281 **6 Claims**



1. An electromagnetic-suspension vehicle system comprising in combination:

a track formed with at least one armature rail extending longitudinally along said track in a direction of displacement and having a pair of pole surfaces;

a vehicle displaceable along said track, said vehicle being formed with a support extending along said rail;

a row of electromagnets on said vehicle for electromagnetically suspending said vehicle from said track, said rail having a pair of pole faces turned toward said electromagnet, said electromagnet having a pair of pole faces turned toward said rail said row, being centered relative to said rail with the pole faces of the electromagnet registering with but spaced from the pole faces of the rail; and

spring-and-damper means between said electromagnet and said support for enabling at least limited relative movement of the vehicle and the electromagnet in a plane parallel to a plane of said pole faces, said spring-and-damper means including a pair of leaf springs extending between said electromagnet and said support in a direction perpendicular to said plane, and a restoring spring connected between said support and said electromagnet and effective in a direction parallel to said plane.

4,259,909

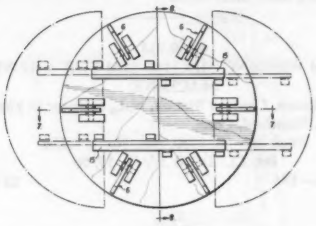
VERTICALLY ADJUSTABLE TABLE

Casimiro Belina, 12306 Wilkens Ave., Rockville, Md. 20852

Filed May 7, 1979, Ser. No. 36,288

Int. Cl.³ A47B *85/00*

U.S. Cl. 108—12 **13 Claims**



1. In a combination coffee and dining room table having a top, which is adjustable at each of two levels of height, and leg members, wherein each leg comprises a short leg and a long leg porion integrally connected together at an obtuse angle and having a pivotal connection in the juncture of said angle, the improvement comprising,

the combination of independent legs and leg suspension means, said suspension means including two spaced support blocks being disposed in close proximity to each side of said juncture of said short and long leg portions, each of said independent legs being pivotally mounted on a rod, said rod being attached to and extending between said spaced support blocks, whereby said independant legs and suspension means may be selectively mounted on the underside of a table top having various configurations.

4,259,910

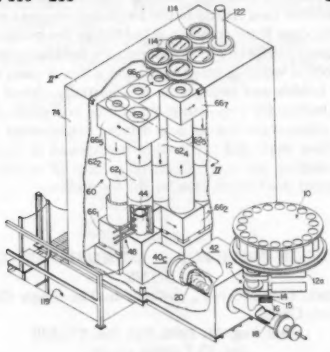
ELECTRIC CONTROLLED AIR INCINERATOR FOR RADIOACTIVE WASTES

Jeffery H. Warren, and Harry E. Hootman, both of Aiken, S.C., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 18, 1979, Ser. No. 58,420

Int. Cl.³ F23B *5/00*; F23C *9/00*; F23G *7/06*

U.S. Cl. 110—211 **25 Claims**



1. A furnace construction comprising, in combination:

(a) a primary combustion chamber,

(b) a plurality of generally vertical refractory tubular members disposed in spaced parallel relationship, one of said vertical members being disposed adjacent to said primary combustion chamber and in communication therewith so as to receive combustion gases therefrom, and,

(c) a plurality of cast refractory manifolds connecting said tubular members together to form an afterburner chamber defining a continuous tortuous path for said combustion gases.

4,259,911

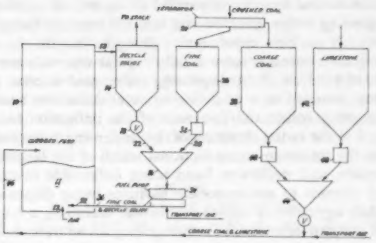
FLUIDIZED BED BOILER FEED SYSTEM

Brian C. Jones, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 21, 1979, Ser. No. 50,721

Int. Cl.³ F22B *1/00*

U.S. Cl. 110—245 **3 Claims**



1. A combustion system including a furnace housing enclosing a fluidized bed of coal and limestone that burns to form gaseous products of combustion and residual char, an outlet in said furnace for the exhaust of the products of combustion and said residual char entrained therein, means separating the products of combustion from said char, a source of crushed coal including coarse and fine particles, means separating the coarse particles of coal from the fine particles, means mixing the residual char with the fine particles of coal, means supplying the coarse particles of coal tb the top of the fluidized bed in the furnace, a source of transport air, a transport line adapted to supply the transport air to said housing, an inlet in said housing adapted to receive the transport air and exhaust it into the fluidized bed, means supplying a mixture of fine particles of coal and residual char to the transport air whereby they are simultaneously exhausted into the fluidized bed, and means interposed in said transport line intermediate the mixing means and the furnace housing adapted to reduce the fines in the transport air to a dense phase.

4,259,912

AGRICULTURAL DISPENSING MECHANISM

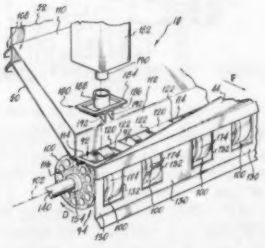
Richard A. Stocks, Wisbech, and David Twell, Moulton, both of England, assignors to Hestair Farm Equipment Limited, Ashford, England

Filed May 16, 1979, Ser. No. 39,523

Claims priority, application United Kingdom, Jun. 3, 1978, 26362/78

Int. Cl.³ A01C *7/20*

U.S. Cl. 111—77 **4 Claims**



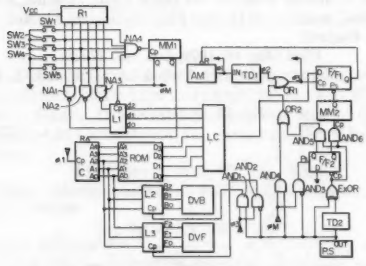
1. A mobile agricultural implement for delivering agricul-

tural particulate materials to the ground, the implement comprising a series of dispensing mechanisms for dispensing agricultural particulate material; each of said dispensing mechanisms comprising a dispensing roller, a dispensing member mounted to cooperate with the dispensing roller in defining a nip to which, in use, agricultural particulate material to be dispensed is supplied, said dispensing roller being mounted for rotation by a drive and being effective when rotated to dispense particulate material through said nip, said dispensing roller comprising a body of nonexpanded polyurethane resilient material having formed therein a series of internal recesses which extend lengthwise parallel to the axis of rotation of the dispensing roller, each of said internal recesses being of substantially uniform cross section along its length, the recesses being distributed at substantially regular intervals around the axis of rotation of the dispensing roller, said internal recesses being arranged so as to define an outer deflection band of the dispensing roller, the thickness of the deflection band measured in the radial direction of the dispensing roller being less than the maximum cross sectional width of the largest of said recesses, said deflection band being deflectible inwards into said recesses to accommodate particles being dispensed; said mobile agricultural implement further including a hopper for said particulate material extending lengthwise transverse to the direction of operative forward motion of the implement, a series of openings formed in the region of the bottom of the hopper, one for each said dispensing mechanism, each said opening communicating with the nip between the dispensing roller and the dispensing member of its respective dispensing mechanism, two side plates being provided one at each lateral side edge of the dispensing roller, the side plates extending downwardly from their respective opening in the bottom of the hopper, the side plates and the dispensing member and the dispensing roller defining a passage containing said nip through which particulate material is dispensed in use, the lower end of the passage forming an outlet for dispensed particulate material, and said outlet communicating with one of a series of delivery tubes for the particulate material.

4,259,913
ELECTRONIC PATTERN CONTROL SEWING MACHINE

Hideaki Takenoya, Hachioji, and Hachiro Makabe, Fussa, both of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed May 21, 1979, Ser. No. 41,404
Claims priority, application Japan, May 25, 1978, 53-61667
Int. Cl.³ D05B *3/02*
U.S. Cl. 112—158 E **1 Claim**

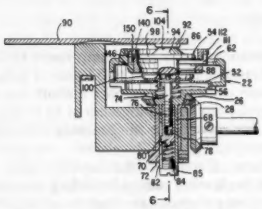


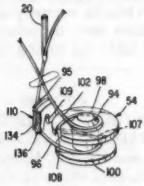
1. A sewing machine having stitch forming instrumentalities operated in synchronism with the upper drive shaft to change the relative positions of the needle and the sewn material to stitch patterns, comprising a plurality of pattern selecting switches (SW_1–SW_5) manually operated to produce pattern selecting signals each specific to the patterns to be selected; a pulse generator (P.S) producing a pulse per rotation of the upper drive shaft at a predetermined angular position thereof; an oscillator (AM) producing a free-running pulse in response to the pulse from the pulse generator; a counter (C) progressively counting the number of the pulses produced by the oscillator; a static memory (ROM) addressed by the progressive counting of the counter to produce a signal for stopping the operation of the oscillator; and control means for selectively applying the counting contents of the counter to the stitch forming instrumentalities.

4,259,914
BOBBIN WINDING MECHANISM FOR A SEWING MACHINE

Ralph E. Johnson, Convent Station, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Jul. 28, 1980, Ser. No. 177,310
Int. Cl.³ D05B *57/14, 59/00*
U.S. Cl. 112—184 **11 Claims**





1. In a sewing machine, the combination comprising a reciprocable needle, a rotatable vertical axis needle thread looptaker, a bobbin case nested in the looptaker; means restraining the bobbin case from rotating, a bobbin in the bobbin case, a spring biased platform which supports the bobbin in the bobbin case, a bobbin winding drive shaft, and a throat plate movable over the bobbin and engageable in a partially closed position with the bobbin for depressing the bobbin and platform into a position wherein the bobbin is in driving engagement with the bobbin drive shaft and the bobbin is disposed to receive for bobbin winding the lower limb of a loop of needle thread moved about the bobbin case by the looptaker.

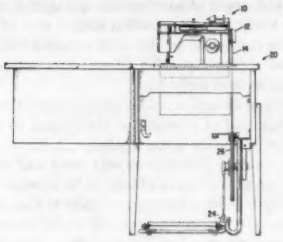
4,259,915
TREADLE DRIVE FOR ELECTRIFIED SEWING MACHINE

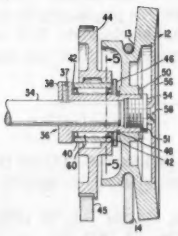
Jan Szostak, Lincroft, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Aug. 11, 1980, Ser. No. 176,829
Int. Cl.³ D05B *69/00*
U.S. Cl. 112—217.4 **3 Claims**

1. A sewing machine comprising a frame, an arm shaft journalled in said frame for rotation in a specific direction, a handwheel operatively secured to an end of said arm shaft, a pulley operatively associated with said handwheel for actuation by an external driving means for driving said sewing machine through said pulley, a one-way clutch supported on said arm shaft, a first drive transmission component operatively connected to said one-way clutch, an internal driving means supported in said frame, additional drive transmission components

interconnecting said internal driving means and said first drive transmission component, whereby said internal driving means may rotate said arm shaft of said sewing machine in said specific direction through said one-way clutch and said external driving means may drive said arm shaft in said specific direction with a minimum of resistance and in an opposite direction with additional resistance occasioned by driving said internal driving means through said first drive transmission component and said additional drive transmission components interconnecting said internal driving means and said first drive transmission component.



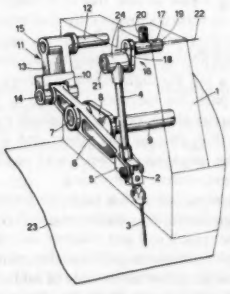


4,259,916

NEEDLE CONTROL DEVICE FOR SEWING MACHINES

Franco Marchesi, Pavia, Italy, assignor to Rockwell-Rimoldi S.p.A., Milan, Italy

Filed Feb. 26, 1980, Ser. No. 124,899
Claims priority, application Italy, Mar. 8, 1979, 20823/79
Int. Cl.[3] D05B *55/14*
U.S. Cl. 112—221 **8 Claims**



1. A device for operating a needle in a sewing machine having a needle-supporting clamp mounted for sliding and guided movement in a vertical plane on a needle bar supported by the machine's frame and pivotably attached to a control lever that is pivoted at one end of a movable lever element and intermediate its ends to a crank fixed on an oscillatably driven shaft of the machine, the improvement comprising:

(a) a fixed seat provided in the frame of the sewing machine;

(b) a support member assembled in and extending from said fixed seat having an axis extending perpendicular to the vertical plane of movement of the needle-supporting clamp;

(c) means operatively connected to said support member having an axis spaced from and extending parallel with the axis of said support member for supporting the needle bar;

(d) means attached to the upper end of the needle bar for pivoting the latter on said supporting means to effect automatic alignment thereof with the effective path of travel of the needle supporting clamp; and

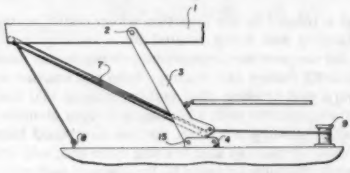
(e) means operatively with said support member for effecting selective eccentric positioning of said supporting means to selectively vary the distance between the needle bar and the point of attachment of the control lever to the crank on the oscillatably driven shaft.

4,259,917

FOLDABLE MAST ASSEMBLY

Richard J. Frank, 1372 39th Ave. N.E., St. Petersburg, Fla. 33703

Filed Nov. 28, 1978, Ser. No. 964,209
Int. Cl.[3] B63B *15/00*
U.S. Cl. 114—91 **7 Claims**



1. A foldable mast assembly comprising, a base, a stub mast, pivot means pivotally connecting said stub mast to said base, a main mast, pivot means pivotally connecting said main mast to said stub mast, first locking means interconnected between said base and said stub mast for holding said stub mast in a substantially vertical operative position, second locking means connected between the stub mast and main mast for holding the main mast in a substantially vertical, operative position, first sheave means mounted on the stub mast, second sheave means mounted on the main mast, a cable being reeved around said sheave means, one end of said cable being connected to a fixed support, and the opposite end of the cable being connected to a winch, whereby to fold the mast assembly to the inoperative position, said second locking means is first moved to the release position, the cable is unwound from said winch allowing said main mast to pivot to a horizontal position relative to the stub mast, said first locking means is then moved to the release position and the continued unwinding of the cable allows said stub mast to pivot to a substantially horizontal position relative to said base.

4,259,918

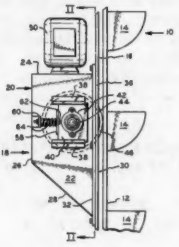
SELF-CLEANING TRACTION WHEEL MOTION SENSOR

John A. Ward, Jackson, and Carol A. Franssen, Concord, both of Mich., assignors to Ward Industries, Inc., Jackson, Mich.

Filed Jun. 25, 1979, Ser. No. 51,358
Int. Cl.[3] B65G *43/00*; G01P *3/34*
U.S. Cl. 116—200 **5 Claims**

1. In a traction wheel motion sensor for sensing the movement of a moving conveyor member including a housing having an open end, a mounting flange defined on said housing at the open end for mounting the housing on a support adjacent the conveyor member to be sensed, a traction wheel shaft

rotatably mounted upon the housing, a traction wheel mounted on the shaft having a periphery extending from the housing open end, the housing including a pair of spaced sidewalls, guide means slidably mounting a bearing plate upon each sidewall for movement toward and away from the housing open end, a bearing mounted upon each bearing plate, the traction wheel shaft being rotatably mounted in the bearings and the traction wheel being located within the housing intermediate the sidewalls whereby adjustment of the bearing plates on the housing varies the degree of extension of the periphery of the traction wheel from the open end, a rotary motion sensing device mounted upon the housing having a rotatable input shaft, and power transmission means drivingly interconnecting the input shaft with the traction wheel whereby the



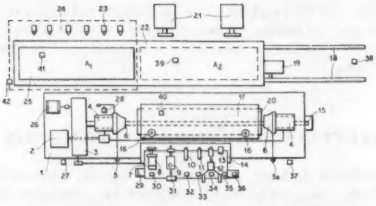
input shaft is rotated by the ktraction wheel upon the traction wheel engaging and being rotated by a moving conveyor member, the improvement comprising, spring means mounted on said housing biasing said bearing plates and traction wheel shaft toward said housing open end for biasing said traction wheel into engagement with a moving conveyor member, and said housing including a bottom portion interposed between said sidewalls intersecting said housing open end, said bottom portion being obliquely oriented to the plane of said mounting flange whereby upon mounting of said housing on a substantially vertically disposed support said lowermost portion of said bottom portion occurs at the intersection of said bottom portion and housing open end whereby foreign matter entering said housing through said open end is discharged from said housing upon said bottom portion.

4,259,919

APPARATUS FOR COATING GRAPHITE ELECTRODES

Todor Y. Koychev; Georgi M. Georgiev; Lyuben K. Lazov, and Alexander Y. Valchev, all of Sofia, Bulgaria, assignors to DSO "Cherna Metalurgia", Sofia, Bulgaria

Filed Jan. 26, 1979, Ser. No. 6,758
Int. Cl.[3] B05B *13/04*
U.S. Cl. 118—47 **4 Claims**



1. An apparatus for the coating of graphite electrodes, comprising:

a coating station provided with a pair of axially spaced clamps adapted to receive an electrode between them and engageable with opposite ends of said electrode for rotating same about an axis, a support disposed between said clamps for holding an electrode prior to engagement of said clamps therewith and upon release of an electrode by said clamps, drive means connected to at least one of said clamps for rotating same and an electrode engaged by said clamps, a pair of deflectors each projecting from one of said clamps and having a distance between them equal in length to the length of an electrode engaged between said clamps, a tool carriage provided with a row of tools for treating the surface of an electrode retained between said clamps and shiftable parallel to said axis between limits determined by said deflectors;

a track extending alongside said coating station opposite said tool carriage and of a length at least equal to twice the length of an electrode to be treated;

an electrode carriage shiftable on said track and of a length at least twice that of an electrode to be treated whereby, half the length of the electrode carriage is disposed opposite said support, the remaining half of the electrode carriage is disposed at a location laterally offset from said support;

elecrode heating means at said location for heating at least the surface of an electode preparatory to its coating; and

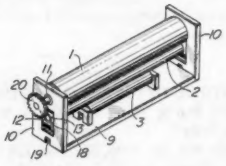
means for transferring an electrode from said electrode carriage to said support and from said support to said electrode carriage.

4,259,920

TONER IMAGE PRESSURE-FIXING DEVICE

Yoshitaka Sasaki, Kumagaya, Japan, assignor to Hitachi Metals, Ltd., Japan

Continuation of Ser. No. 882,148, Feb. 28, 1978, abandoned.
This application Dec. 13, 1979, Ser. No. 103,104
Claims priority, application Japan, Aug. 5, 1977, 52-93426; Aug. 17, 1977, 52-97881; Aug. 17, 1977, 52-97882
Int. Cl.[3] G03G *15/20*
U.S. Cl. 118—116 **8 Claims**



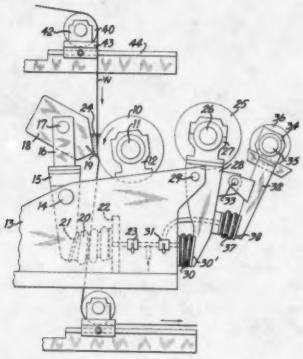
1. In a device for fixing a toner image to a carrier sheet by pressure, including a pair of side frame members cooperating with a base frame to form a substantially U-shaped framework, a pair of pinch rolls rotatably mounted on said pair of side frame members and arranged in rolling engagement with each other to provide a nip through which a carrier sheet with a deposit of toner particles thereon is passed to fix the toner particles to the carrier sheet, one of said pinch rolls being of a diameter smaller than that of the other, and a back-up roll disposed in rolling engagement with said smaller diameter pinch roll, the improvement comprising:

spring members mounted within said side frame members to resiliently urge the smaller diameter pinch roll against the larger diameter pinch roll and wherein said back-up roll is in the form of a one-piece roll rotatably mounted on said framework and disposed on the side of said smaller diameter pinch roll substantially diametrically opposite to said larger diameter pinch roll and is resiliently urged against said smaller diameter pinch roll, said back-up roll being so disposed relative to the smaller diameter pinch roll that the axis of said back-up roll extends at an angle relative to the axis of said smaller diameter pinch roll.

4,259,921
SELECTIVELY CONVERTIBLE APPARATUS FOR TREATING A MOVING WEB

Hans I. Wallsten, Lausanne, Switzerland, assignor to Inventing S.A., Lausanne, Switzerland

Filed Jul. 11, 1979, Ser. No. 56,503
Claims priority, application Sweden, Dec. 20, 1978, 7813128
Int. Cl.³ B05C *1/08, 3/172*
U.S. Cl. 118—206 **7 Claims**



1. Apparatus selectively convertible to perform one or more coating operations on a web of paper or the like comprising,

a first rotatable support roller,

a coating blade movable between a first fixed position in web coating relation to the surface of said support roller and a second fixed position away from said roller,

controllable means for setting said coating blade selectively at either of said first and second fixed positions,

means adapted to cooperate with said blade in said first fixed position and with said support roller to form a dam for coating material to be applied to a web passing through the nip between said coating blade and said support roller,

a second rotatable support roller disposed with its axis of rotation parallel to said first support roller and mounted for movement from an active position in which it forms a nip with said first roller to an inactive position away from said first roller,

controllable means for setting said second support roller selectively at either of said active or inactive positions,

means adapted to cooperate with said rollers in said active position to form a dam for coating material, and

drive means for said first and second support rollers.

4,259,922
APPARATUS FOR PRODUCING LOCKING PATCHES ON MAGNETIC SCREWS

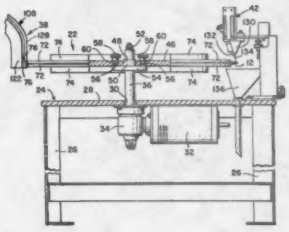
Hilmar K. Dieme, Westfield, N.J., assignor to Amerace Corporation, New York, N.Y.

Division of Ser. No. 695,199, Dec. 30, 1975, Pat. No. 4,082,058. This application Aug. 25, 1977, Ser. No. 827,695
Int. Cl.³ B05B *13/00;* **B25B** *11/00*
U.S. Cl. 118—500 **17 Claims**

1. For use in a machine for producing locking patches of thermoplastic material on threaded portions of screws of magnetic material;

a dial assembly comprising a central disc of non-magnetic material and a plurality of similar, closely-spaced permanent magnets mounted on and extending outwardly from said disc and in magnetic communication with the outer periphery of said dial assembly for magnetically holding said screws there-against;

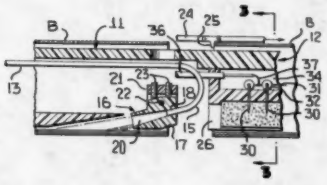
each said magnet located between upper and lower segments of non-magnetic material mounted on the upper and lower faces of said disc, respectively, said segments having confronting spaced-apart outer edges overlapping the outer extremity of the magnet which is therebetween, there being a gap between said confronting edges and said segments being coated with heat-insulating plastic material.



4,259,923
REVERSE SPRAY ELECTROSTATIC AIR/POWDER STRIPE APPLICATOR

Joseph R. Breen, Alsip, Ill., assignor to The Continental Group, Inc., Stamford, Conn.

Continuation-in-part of Ser. No. 936,545, Aug. 23, 1978, abandoned. This application Apr. 8, 1980, Ser. No. 138,628
Int. Cl.³ B05B *5/02;* **B05C** *19/00, 7/02*
U.S. Cl. 118—622 **10 Claims**



1. A powder applicator for internally striping side seams of tubular bodies, said powder applicator comprising support means for supporting tubular bodies for movement along a predetermined path, a fixed discharge nozzle having an orifice for directing powder in a controlled straight line stream, a supply line carried by said support means and for directing gas entrained powder towards said nozzle, said supply line having adjacent said nozzle means for de-entraining the powder and effecting the supplying of the gas and the powder in separate layers to said nozzle with the powder being concentrated in a preselected sector of said nozzle for effecting the discharge of the powder in a dense stream, said means being a reverse turn in said supply line, said orifice opening generally in opposition to the direction of travel of said tubular bodies along said path of movement, said nozzle and said supply line including said reverse turn being disposed within said predetermined path, and electrostatic charging means within said path adjacent said nozzle for charging discharged powder to retain the powder in place on said tubular bodies.

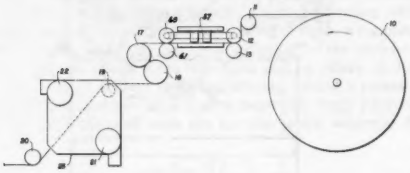
4,259,924
DEVICE FOR COATING PAPER

Robert C. Smith, 8862 U.S. Rte. 42, Florence, Ky. 41042

Filed Feb. 13, 1978, Ser. No. 877,307
Int. Cl.³ C23C *13/08*
U.S. Cl. 118—706 **4 Claims**

1. A device for coating paper with a resin of the polypropylene class comprising the combination of a pair of pressure rolls through which paper is drawn, an applicator through which resin is applied to the paper to be coated, a pair of chill rolls

through which the resin coated paper is passed, said applicator having a series of rotating heads to which nozzles are secured, heating means in said applicator through which said resin is passed, said material heated to a range of 500°–550° F., gear means for rotating said rotating heads at a constant speed, a



pump for supplying constant pressure to said rotating heads to secure the even application of resin to paper which is passed under said heads and vacuum means secured to the underside of said device for securing said paper while said paper is resin coated.

4,259,925

FLUIDIZED BED REACTOR

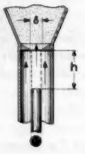
Eike Barnert, Jülich; Wolfgang Frommelt, Linnich, and Erich Zimmer, Jülich, all of Fed. Rep. of Germany, assignors to Kernsforschungsanlage Jülich GmbH, Jülich, Germany

Filed Oct. 17, 1979, Ser. No. 85,780

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1978, 2846160

Int. Cl.[3] **B05C** *11/10;* **C23C** *13/08*

U.S. Cl. 118—716 **8 Claims**



1. A fluidized bed reactor comprising a container for a fluidized bed and an input for introduction of a reaction gas to the bottom of the fluidized bed, through an opening in the bottom of said container constituting a constriction in the gas supply duct, said gas supply duct including a central reaction gas supply duct surrounded by an annular duct for a carrier gas, said reaction gas supply duct having an open end spaced from said constriction, the outer wall of said annular duct continuing to said container around said constriction, said reactor having the improvement which consists in that said reaction gas supply tube is subdivided in cross-section into a plurality of separate individual ducts arranged to effect laminar flow.

4,259,926

METHOD AND APPARATUS FOR REARING OF PLANKTONIC LARVAE OF MARINE ANIMALS

Jeffrey B. Marliave, 2423 King Ave., West Vancouver, B. C., Canada (V7V 2C5)

Continuation-in-part of Ser. No. 14,168, Feb. 22, 1979, abandoned. This application Jan. 17, 1980, Ser. No. 112,841

Int. Cl.[3] **A01K** *61/00*

U.S. Cl. 119—2 **24 Claims**

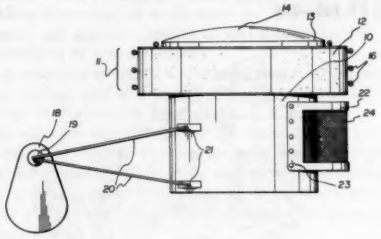
1. A method for the field rearing of planktonic larval forms of marine animals comprising:

(a) suspending a field culture enclosure in oceanic tidal waters; said enclosure being amenable to the passage therethrough of water;

(b) stocking the interior of said enclosure with planktonic larvae of a preselected species of marine animal;

(c) permitting said enclosure to orient in response to tidal flow of said oceanic tidal waters to admit water into said enclosure;

(d) screening said tidal flow of water prior to entry into said



enclosure thereby preventing the entry into said enclosure of plankton of greater than a predetermined size, and permitting the entry into said enclosure of food plankton of less than a predetermined size; and

(e) filtering said water prior to its exiting said enclosure to prevent the escape of the larvae and food plankton therefrom.

4,259,927

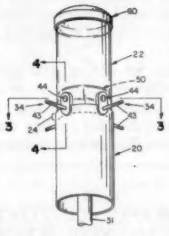
BIRDFEEDER

Stephen G. Clarke, Coventry, Conn., assignor to Clark Products Co., Inc., West Hartford, Conn.

Filed Jun. 13, 1979, Ser. No. 48,031

Int. Cl.[3] **A01K** *39/01*

U.S. Cl. 119—51 R **23 Claims**



1. A birdfeeder for mounting on a post, comprising

a portion for connecting said feeder to said post, said portion having an axis,

a generally cylindrical, non-chewable material, squirrel-proofing wall surrounding said axis,

portions of said wall being laterally spaced from said axis sufficiently to prevent squirrels on said post from supporting themselves on said wall,

said wall extending along said axis sufficiently to prevent squirrels from reaching beyond said wall, and

a transparent plastic feed reservoir extending upwardly along said axis, said reservoir having a wall extending upwardly from said squirrel-proofing wall and having a plurality of feed dispensing ports therein, said reservoir being separate from, but rigidly connected to, said squirrel-proofing wall.

4,259,928

CONTINUOUS FLOW WATER HEATER

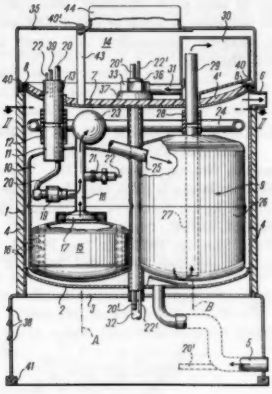
Ludwig Huber, Saarland St. 15, 7000 Stuttgart 80, Fed. Rep. of Germany

Filed May 3, 1979, Ser. No. 35,376

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1978, 2825809

Int. Cl.[3] F22B *31/00*

U.S. Cl. 122—24 16 Claims



1. A continuous flow water heater, comprising:

a caldron, closed at its upper end by a caldron cover, and provided with a water intake at its lower end and a water outlet at its upper end beneath said cover, and a pulsating heating unit comprising, an air inlet conduit, a first vertically standing cylinder containing air intake sound muffling means, said air inlet conduit being connected to said first vertically standing cylinder, a combustion chamber above said first vertically standing cylinder, a fuel/air mixing means connected to said air intake sound muffling means and to said combustion chamber, a fuel intake conduit connected to said mixing means, a pulsating pipe connected to said combustion chamber and extending therefrom in a substantially horizontal plane, the end portion of said pulsating pipe being inclined downwardly from said plane, a second cylinder provided with an exhaust gas sound muffling means of approximately the same height as said first cylinder and arranged in parallel to and at the side of said first cylinder, said end portion of the pulsating pipe being connected to said second cylinder, and an exhaust gas conduit connected to said second cylinder whereby said pulsating heating unit is immersed in said caldron in a position between said water intake and said water outlet, and whereby said air inlet conduit, said fuel intake conduit and said exhaust gas conduit extend vertically downward from said cover to said first vertically standing cylinder, said mixing means and said second cylinder, respectively.

4,259,929

ROTARY INTERNAL COMBUSTION ENGINE

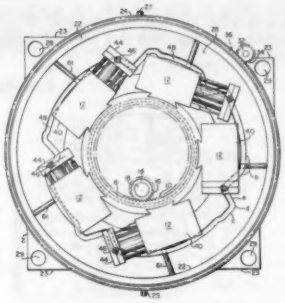
Thomas Cruickshank, 275 Shuter St., Apt. 1212, Toronto, Ontario, Canada (M5A-1W4)

Continuation-in-part of Ser. No. 889,643, Mar. 24, 1978, abandoned. This application Jun. 12, 1979, Ser. No. 47,943

Int. Cl.[3] F02B *57/00*

U.S. Cl. 123—43 C 10 Claims

1. A rotary internal combustion engine comprising a frame, axially spaced end casings attached to said frame, an annularly-shaped rotatable gear ring disposed between said end casings, said gear ring having teeth disposed internally thereon, piston-cylinder units fixed to said gear ring and moveable therewith, annular cam rings mounted in said end casings respectively, gear train means interconnecting said gear ring and said cam rings for turning said cam rings in the same direction as said gear ring, said cam rings having grooves therein, piston portions of said piston-cylinder units having protrusions disposed in said grooves, said cam rings thereby determining movement of said piston portions in said piston-cylinder units.



4,259,930

DEVICE FOR STARTING A STATIONARY UNIT

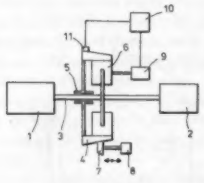
Peter Hofbauer, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Jul. 26, 1979, Ser. No. 60,875

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1978, 2850553

Int. Cl.[3] F02N *17/00*

U.S. Cl. 123—179 J 4 Claims



1. A device for starting a stationary unit including a prime mover, e.g. an internal combustion engine, and a machine rigidly coupled thereto, e.g. a compressor of a heat pump system, wherein the device includes a flywheel fitted on a common shaft connecting the prime mover and the machine, which flywheel is engageable and disengageable from the shaft by means of a clutch and is driveable by a starter, characterized in that the clutch is actuated automatically according to the speed of the flywheel.

4,259,931

VALVE SELECTOR MODULE ASSEMBLY

David P. Clark, Battle Creek, and John L. Eustis, Richland, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jul. 17, 1979, Ser. No. 58,355

Int. Cl.[3] F02D *13/06*

U.S. Cl. 123—198 F 9 Claims

8. In a rotary latching mechanism for an internal combustion engine valve selector of the type having a telescoping spring capsule, a rotary blocking plate, and a mounting bracket, wherein the improvement comprises:

(a) said spring capsule having an upper spring retainer mem-

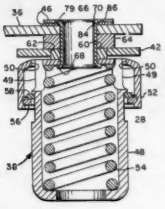
ber, said spring retainer member having a notch in the outer surface thereof;

(b) said bracket having a notch therein;

(c) a locating clip connected to said bracket, said clip including,

(i) a first horizontal portion adjacent said bracket,

(ii) a downwardly extending tab, said tab extending into said notch,



(iii) a second looped portion extending beyond said bracket and returning toward said upper spring retainer member, said second portion having an end in locking engagement with said notch such that said spring capsule is positioned in a predetermined angular relationship to said bracket and said rotary blocking plate.

4,259,932

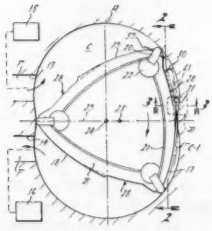
INTERNAL COMBUSTION ENGINE CONTROL SYSTEM

Laszlo Hideg, Dearborn, and Robert P. Ernest, Dearborn Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 636,184, Nov. 28, 1975, Pat. No. 4,060,058. This application May 26, 1976, Ser. No. 690,118

Int. Cl.[3] F02B *53/10*

U.S. Cl. 123—209 **14 Claims**



1. A method for increasing the combustion speed of an Otto cycle internal combustion engine, said engine having a housing and a plurality of variable volume arcuately translating main combustion chambers in said housing, each main combustion chamber having leading and trailing portions viewed with respect to the direction of translation of said main combustion chamber, the method comprising:

(a) providing at least one prechamber in said housing, said prechamber having an orifice communicating with each of said variable volume combustion chambers when the latter are in substantially their smallest volume condition, defining said prechamber to have a substantially sperical volume portion with the centerline of said orifice lying on a radius of said spherical portion,

(b) inducting a combustible mixture into each of said main combustion chambers during the induction cycle of said engine,

(c) introducing a predetermined quantity of combustible mixture into said prechamber during at least a portion of the compression cycle of said engine, said introduced mixture being equal to or richer than the inducted mixture, said introduced mixture being at a pressure equal to or greater than the pressure in said main combustion chamber at the moment of introduction, and

(d) igniting the introduced mixture in said prechamber substantially at a locus adjacent the center of said spherical portion for generating a flame torch eminating from said orifice and directed into said adjacent main combustion chamber during the combustion cycle of said engine, said flame torch having a length greater than any transverse dimension of said main chamber, said torch being arranged to stimulate a vortical entraining motion of the unburned mixture surrounding said torch in the main combustion chamber.

4,259,933

COMBUSTION CHAMBER OF AN INTERNAL COMBUSTION ENGINE

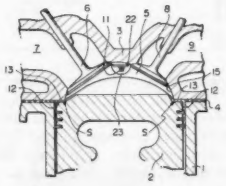
Kiyoshi Nakanishi, Susono; Kazuhiko Ito, Toyota; Takeshi Okumura, Susono; Isamu Iezuka, and Masao Yasukawa, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 15, 1979, Ser. No. 39,183

Claims priority, application Japan, Jul. 20, 1978, 53/87666

Int. Cl.[3] F02B *23/08*

U.S. Cl. 123—307 **10 Claims**



1. An internal combustion engine comprising:

a cylinder block having a cylinder bore therein;

a cylinder head mounted on said cylinder block and having an inner wall;

a first raised portion having on its lower end a flat bottom face and being formed on the periphery of the inner wall of said cylinder head so as to project downwards;

a piston reciprocally movable in said cylinder bore and having a top face which has a flat peripheral portion approachable to said flat bottom face so as to create a first squish area therebetween at the end of the compression stroke for spouting out a first squish flow along the top face of said piston, the inner wall of said cylinder head and the top face of said piston defining a combustion chamber therebetween;

an intake valve movably mounted on said cylinder head for leading a combustible mixture into said combustion chamber;

an exhaust valve movably mounted on said cylinder head for discharging exhaust gas into the atmosphere;

a second raised portion formed on the top face of said piston at a position opposite to said first raised portion with respect to an axis of said piston and having a rear face and a front face exposed to said combustion chamber, said rear face being approachable to the inner wall of said cylinder head so as to create a second squish area therebetween at the end of the compression stroke for spouting out a second squish flow which moves forward in the upper interior of said combustion chamber in the direction opposite to the spouting direction of said first squish flow, said first and second squish flows cooperating with each other to create a strong swirl motion rotating about a horizontal axis in said combustion chamber;

a spark plug having a spark gap located in said combustion chamber;

a first exhaust squish area next to said exhaust valve formed

between the flat bottom face next to said exhaust valve of said first raised portion and the flat peripheral portion next to said exhaust valve of said piston;

a first intake squish area next to said intake valve formed between the flat bottom face next to said intake valve of said first raised portion and the flat peripheral portion next to said intake valve having a smaller area than said first squish exhaust area;

a second exhaust squish area formed from the second squish area being on the opposite side of said exhaust valve from said first exhaust squish area next to said exhaust valve, and;

a second intake squish area formed from the second squish area being on the opposite side of said intake valve from said first intake squish area, said second intake squish area having a smaller surface area than said second exhaust squish area.

4,259,934

APPARATUS FOR GENERATING AN IGNITION CONTROL SIGNAL FOR AN INTERNAL COMBUSTION ENGINE

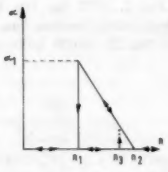
Reinhard Leussink, Vaihingen; Manfred Metger, Markgröningen, and Adolf Fritz, Stuttgart, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 4, 1979, Ser. No. 81,684

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1978, 2845285

Int. Cl.³ F02P *5/04*

U.S. Cl. 123—424 **16 Claims**



1. Apparatus to generate an ignition control signal for an internal combustion engine, said apparatus including

an engine speed transducer (10) to generate a signal related to a substantially fixed rotational angle of a piston of said engine with respect to top dead center (TDC) position thereof, said signal having leading and trailing signal flanks;

an ignition control signal generating means coupled to the transducer and responsive to a signal flank of the signal from the transducer, including

a speed responsive circuit and a timing means responsive to the occurrence of at least one of the respective signal flanks,

said ignition control signal generating means generating a speed-dependent ignition control signal as a function of the timing operation of the timing means and under continuous control of the speed signal responsive circuit to provide said ignition control signal smoothly varying as a function of speed in the direction of ignition angle advance upon decrease of rotational speed below a predetermined upper idling threshold value,

and wherein

the ignition control signal generating means includes a hysteresis circuit to affect smooth shifting of the respective signal flank in the direction of ignition angle advance, only when the speed drops from above said predetermined upper idling threshold value to below said upper value, while leaving unaffected the ignition angle when the speed rises towards said predetermined upper idle threshold value from a speed less than said predetermined upper idle threshold value.

4,259,935

FUEL INJECTION TYPE THROTTLE VALVE

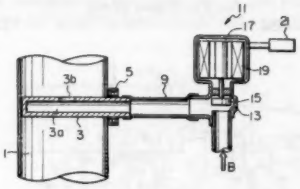
Noboru Watanabe, Susono; Tokuta Inoue, Mishima, and Masaki Mitsuyasu, Susono, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

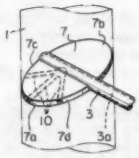
Continuation of Ser. No. 912,536, Jun. 5, 1978, abandoned. This application May 7, 1980, Ser. No. 147,527

Claims priority, application Japan, Apr. 5, 1978, 53/42644

Int. Cl.³ F16K *19/00*; B01F *3/02*

U.S. Cl. 123—478 **3 Claims**





1. A fuel injection device for an engine, said device comprising:

a fuel injection type throttle valve comprising:

an elongated throttle shaft having a longitudinally extending passage for fuel defined therein, said shaft being adapted to traverse an intake air supply passage, said shaft being rotatable about its longitudinal axis;

a throttle valve plate fixed to said throttle shaft for throttling the intake air supply passage, said plate being adapted to vary the opening of the air supply passage upon rotation of the throttle shaft;

a plurality of outwardly facing fuel outlet openings peripherally spaced from each other in the periphery of the throttle valve plate; and

a plurality of connecting passages defined in said valve plate, one end of each of said passages being directly fluidly connected to said fuel passage at substantially the center of said valve plate, extending substantially straight and outwardly therefrom and terminating at a respective one of the fuel outlet openings;

a fuel supplying means comprising:

a valve seat;

an electromagnetic valve device having a valve body which cooperates with said valve seat, a rod connected to the valve body, and an electromagnetic coil for moving the rod in an axial direction and thereby moving the valve body relative to the valve seat; and

a computer for controlling the electromagnetic valve device in accordance with the rotating speed, load, and temperature of the engine, said computer having an element, for effecting an algebraic function, which receives signals corresponding to the rotating speed, load and temperature of the engine from sensing devices; and

a flexible tube directly fluidly interconnecting the fuel supplying means and the throttle shaft.

4,259,936
DEVICE FOR ELECTRONICALLY CONTROLLING THE INTAKE AIR TEMPERATURE OF AN INTERNAL COMBUSTION ENGINE

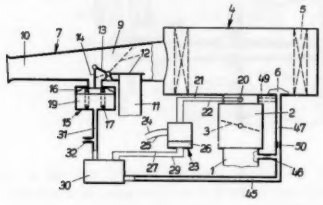
Walter Bach, Steinheim; Rainer Blumhardt, Remseck; Rolf Füsser, Freiberg, and Karl-Heinz Rückert, Marbach-Hörnle, all of Fed. Rep. of Germany, assignors to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Fed. Rep. of Germany

Filed Aug. 2, 1979, Ser. No. 62,965

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1978, 2833833

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—556 **12 Claims**



1. A device for controlling the temperature of the combustion air in the air intake system of an internal combustion engine, comprising in combination:

a cold air intake duct for the intake of air of ambient temperature;

a warm air intake duct for the intake of preheated air coming from an air heater associated with the engine;

a duct junction, where the cold air intake duct joins the warm air intake duct;

a combustion air duct leading from the duct junction to the cylinder or cylinders of the internal combustion engine;

an air flow proportioning valve associated with the cold air and warm air intake ducts, the valve being adjustable in its position so as to progressively open one of the two ducts while correspondingly closing the other, in order to adjust the relative quantities of cold air and preheated air which are drawn into the combustion air duct;

means for sensing the air temperature in the combustion air duct and for generating an electrical control signal which is indicative of the temperature level;

means for adjusting the position of the air flow proportioning valve in response to the electrical control signal generated by the temperature sensing means, so that, when the temperature in the combustion air duct rises, the corresponding control signal from the temperature sensing means induces the valve position adjusting means to adjust the air flow proportioning valve in the direction of closing the warm air intake duct and opening the cold air intake duct; and

means responsive to the volume of combustion air consumed by the engine, as a function of the engine speed and operating load, said air-consumption-responsive means being operable in such a way that, at increasing rates of air consumption, under temperature conditions at which the temperature-indicative electrical control signal would act to admit preheated air, said action is progressively more offset, so as to restrict the admission of preheated air and to establish a lower combustion air temperature.

4,259,937
FUEL TREATMENT DEVICE

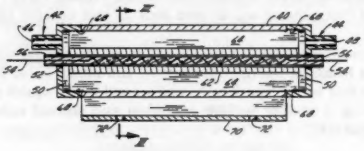
Kevin J. Elliott, Pointe Claire, Canada, assignor to Tempetro International Limited, Montreal, Canada

Filed Jan. 15, 1979, Ser. No. 3,595

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—557 **5 Claims**

1. A fuel temperature controlling device for use in an internal combustion engine in which fuel is metered to the engine, the device having an elongate tubular casing closed at each end, a fuel inlet at one end of the casing, a fuel outlet at the other end of the casing, electrically heating means extending axially through the casing, an impervious heat conducting tubular member extending over a substantial portion of the length of the casing, the member filling the space between the heating means and the casing and being in tight contact with



both the casing and the heating means, each end of the member spaced a short distance from the respective end of the casing to form a chamber, a plurality of slots in the heat conducting member extending the length of the member between its ends, each slot extending radially inwardly from the outer surface of the member toward, but terminating short of, the heating means, each slot having a rectangular cross-sectional shape.

4,259,938
APPARATUS IN ELECTRONIC IGNITION SYSTEMS

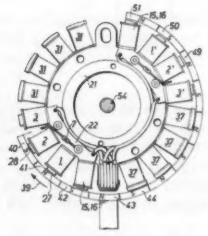
Sven H. Johansson, Amal, Sweden, assignor to Aktiebolaget Svenska Electromagneter, Amal, Sweden

Filed Jun. 1, 1979, Ser. No. 44,655

Claims priority, application Sweden, Jun. 2, 1978, 7806521

Int. Cl.³ F02P *1/00*

U.S. Cl. 123—599 **11 Claims**



1. An ignition system for an internal combustion engine having a flywheel and a spark plug, comprising:

(a) a plurality of magnets for being carried on the flywheel and having poles of alternating polarity arranged in uniform spacing;

(b) a first magnetic core having legs arranged in said uniform spacing to coact with said magnets;

(c) charging coils on said legs;

(d) a capacitor arranged to be discharged through the spark plug;

(e) a charging circuit including the windings of said charging coils, and connected to said capacitor;

(f) a second separate magnetic core having a leg for coacting with said magnets, said leg being remote from the nearest of said first-named legs by a plurality of pole spacings;

(g) said legs of said first magnetic core having a mutual spacing such that they can be simultaneously aligned with said poles while the leg of said second magnetic core is displaced from a position of alignment with an adjacent pole;

(h) said legs of said first magnetic core being radially directed towards the rotational axis of the flywheel, and said

leg of said second magnetic core being inclined away from said axis towards the direction of rotation of the flywheel; and

(i) a trigger coil on the leg of said second core and having a winding forming part of a trigger circuit connected to discharge said capacitor, the phase position of pulses induced in said trigger coil being ahead of pulses induced in said charging coils.

4,259,939

FOUR LEAD MONOLITHIC DARLINGTONS

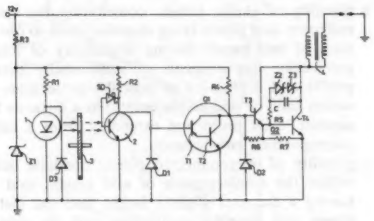
John P. Coates, London, England, assignor to Lumenition Limited, London, England

Filed Sep. 18, 1979, Ser. No. 76,567

Claims priority, application United Kingdom, Oct. 2, 1978, 38978/78

Int. Cl.³ F02P *3/06*

U.S. Cl. 123—605 **3 Claims**



1. The combination of a monolithic Darlington and a control circuit for controlling the rate at which the monolithic Darlington is permitted to switch off; said monolithic Darlington comprising first and second transistors connected so that the collectors thereof are common and the emitter of the first transistor is connected to the base of the second transistor forming an intermediate emitter-base junction therebetween, and said combination including four terminals formed on a silicon wafer and interconnected such that a first terminal is connected to the common collectors, a second terminal is connected to the base of the first transistor, a third terminal is connected to the emitter of the second transistor, and the fourth terminal is connected to the intermediate emitter-base junction of the two transistors; said control circuit being connected between the first terminal and the fourth terminal.

4,259,940

GRINDING MACHINE WITH A CBN GRINDING WHEEL

Hiroaki Asano, Chiryu, and Toshio Maruyama, Kariya, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Aichi, Japan

Filed Aug. 28, 1979, Ser. No. 70,398

Claims priority, application Japan, Sep. 5, 1978, 53-108924

Int. Cl.³ B24B *53/04*

U.S. Cl. 125—11 CD **2 Claims**

1. A grinding machine having a wheel head movable in a first direction and rotatably carrying a grinding wheel made of hard material such as cubic boron nitride, said grinding machine comprising:

a traverse table slidable in a second direction intersecting said first direction;

a work head mounted on said traverse table and supporting a work support shaft;

a drive motor for rotating a workpiece carried by said work support shaft;

a truing wheel coaxially carried on one end of said work support shaft and rotated in the opposite rotational direction with respect to said grinding wheel for truing said grinding wheel;

a dressing roll coaxially carried on said one end of said work support shaft in juxtaposed relation with said truing wheel and rotated in the same direction as the rotational direction of said grinding wheel during dressing for backing up free abrasive grains supplied into a gap between said dressing roll and said grinding wheel;

power transmitting means for transmitting driving power from said drive motor to said truing wheel and said dressing roll;

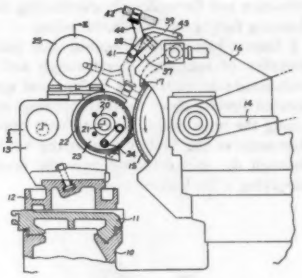
a grinding stick made of abrasive material and relatively hard bonding material;

a stick holder holding said grinding stick;

a lever provided on said wheel head and positioned for moving said grinding stick toward and away from a grinding surface of said grinding wheel, wherein said grinding stick is positionable into contact with said grinding surface of said grinding wheel at a point wherein free abrasive grains from said grinding stick are movable to said gap;

said grinding stick providing said free abrasive grains between said dressing roll and said grinding wheel by being ground with said grinding wheel when pressed upon said grinding surface of said grinding wheel; and

a drive member secured to one of said truing wheel and said dressing roll for transmitting driving power from said power transmitting means to a workpiece carried by said work support shaft, through said one of said truing wheel and said dressing roll.



4,259,941

FIREPLACE CONSTRUCTION FOR MOBILE HOMES

Heinrich D. Gerdes, Topeka, Kans., assignor to Sadie M. Northwood, Kansas City, Mo.

Filed Feb. 1, 1978, Ser. No. 874,138

Int. Cl.³ F24B *1/18*

U.S. Cl. 126—120 **4 Claims**

1. A prefabricated fireplace structure adapted for mounting in a building wall and comprising:

(a) a fireplace structure having an internal firebox and upper and lower and spaced side support members adapted for supporting the fireplace structure in a wall with the firebox positioned outside of a building and with the firebox having an entranceway to a room;

(b) a flue situated outside of the building and having an internal passage connected to said firebox and upstanding therefrom for exhausting combustion gases to the outside atmosphere, said firebox and said flue being disposed outside of said room and communicating with the outside atmosphere;

(c) an open bottom portion of said fireplace structure located substantially directly below said firebox and open to and communicating the outside atmosphere with the firebox and flue;

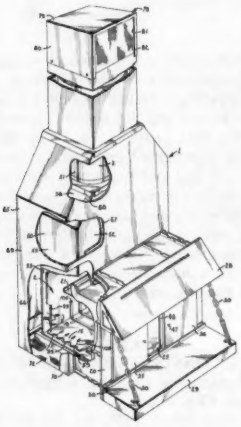
(d) outer walls defining an outer shell generally surrounding the firebox and flue and providing air current passageways therearound, said outer walls directly communicating said open bottom portion with said passageways whereby outside air is drawn directly upward by thermal

siphoning from said open bottom portion around said firebox and flue for cooling thereof and substantially eliminating the transfer of heat from the firebox and flue to the building wall before being exhausted back to the outside atmosphere;

(e) said firebox having an interior area with a plurality of draft openings leading thereinto and communicating with said air current passageways for drawing the outside air upwardly through said open bottom portion and into the firebox by said thermal siphoning; and

(f) said draft openings being arranged around said firebox and of an area commensurate with the size of the internal passage in the flue for supplying all of the air necessary for combustion and for uniformly distributing the outside air to burning fuel in the firebox, including

(1) a firebox base having opposite side portions with a plurality of apertures therethrough and which abut associated side walls of the firebox, said apertures being located directly above the draft openings and communicating the open bottom portion with opposite bottom side areas of the firebox so that the outside air flows through the apertures and over the firebox base for supplying a fire located thereabove;



(2) said firebox base including a forward portion having a forward margin with an airflow opening means therealong communicating the open bottom portion with a lower, forward area of the firebox for flow of outside air thereinto; and

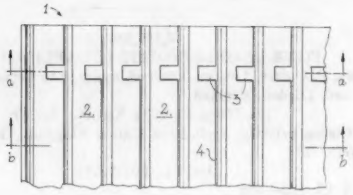
(3) a firebox rear panel having opposite side portions with respective openings therein communicating the open bottom portion with a generally lower, rear area of the firebox, whereby the outside air is drawn through said rear panel openings and into the lower, rear area of the firebox and flows over the firebox base to supply a fire located thereabove and whereby, during combustion in said fireplace structure, a portion of the outside air is drawn smoothly and evenly upwardly through said open bottom portion and into said firebox to supply the burning fuel therein with outside air for complete and even combustion thereof without drawing inside air from the room and whereby another portion of the outside air is drawn into the passageways around the firebox and flue to thermally insulate the building wall therefrom.

4,259,942

SOLAR HEATERS

Ami Katz, 8 Maaley Habanim, Ramath Gan, Israel

Filed Oct. 28, 1977, Ser. No. 846,586
Claims priority, application Israel, May 27, 1977, 52175
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—442 **2 Claims**



1. A solar heat collector, comprising:

a plurality of plastic panels, constituting the base of the collector, said panels being disposed close to one another, each of said panels having a plurality of longitudinal groovelike emplacements of substantially paraboloidal profile and a plurality of noselike projections disposed within each of said emplacements at a distance from one another, each projection extending from a side of the corresponding emplacement;

a plurality of interconnected plastic conduits held firmly within the emplacements of said panels, said conduits having a diameter slightly larger than the distance between said noselike projections and the side of said groovelike emplacements directly opposite the side from which the respective projections extend, said conduits thereby being firmly clamped within the emplacements of said panels;

means connected to said conduits for connection with a water supply; and

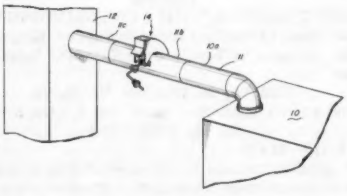
means connected to said conduits for communication with a body of water which has been heated while in said conduits.

4,259,943

FUEL ECONOMIZER

Andrew A. Rodrigue, 27 Elm St., Lewiston, Me. 04240

Filed Sep. 11, 1979, Ser. No. 74,325
Int. Cl.[3] F23L *3/00*
U.S. Cl. 126—292 **4 Claims**



1. A fuel economizer device for mounting in a flue pipe between a furnace and an exhaust stack,

said device comprising,

a lateral vane for overlying a cutout in a flue pipe and carrying a baffle plate for mounting transversely to said flue pipe to obstruct a portion of passageway therein,

mounting means for permitting movement of said vane and attached baffle plate transverse to said passageway with said baffle plate moving substantially in a plane poartially into and out of said passageway,

wherein said mounting means permits reciporcal pitting,

weighted means connected to said vane to maintain it in a normally closed position yet permitting opening thereof in

repsone to gas pressure exerted on an interior surface of said vane,

a vane housing overlying said vane, and

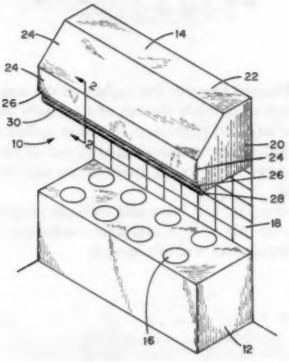
said vane housing comprising a hood for permitting gas flow from a powtion of said cutout over one side of said baffle plate around said vane and to another side of said faffle plate within said flue pipe.

4,259,944

SANITARY HOOD EDGE

Charles W. Kalthoff, Rte. 34, Emory Church Rd., Knoxville, Tenn. 37922

Filed Sep. 4, 1979, Ser. No. 72,216
Int. Cl.³ F24C *15/20*
U.S. Cl. 126—299 D **6 Claims**



1. An edge trim for use with a ventilator which protects both against injury due to impact as well as against fire hazards and bacteria growth by preventing the accumulation of grease and animal fat, said edge trim comprising:

a ventilator side having two surfaces and an exposed edge, said side having a selected thickness between said surfaces;

a cylindrical member defining a slit along its surface, said slit having a length suitable for covering a selected portion of said exposed edge, and said slit having a width no greater than said selected thickness of said ventilator side, said exposed edge of said ventilator surface being inserted into said slit such that said cylindrical member covers said selected portion of said exposed edge of said ventilator side;

means for permanently attaching at spaced locations said cylindrical member to said ventilator side to increase the structural strength thereof; and

means for providing a grease impervious seal between the juncture of said slit of said cylindrical member and both surfaces of said ventilator side to provide protection against fire hazards and injury due to impact against said edge of said ventilator side.

4,259,945

EXHAUST SYSTEM WASHING APPARATUS

Richard L. Lawson, 3272 N. Greenwood Ave., Sanger, Calif. 93657

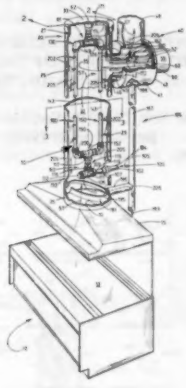
Filed Oct. 11, 1979, Ser. No. 83,689
Int. Cl.³ F24C *15/20*
U.S. Cl. 126—299 E **2 Claims**

1. In combination with an exhaust system provided with a substantially straight flue having opposite ends for conveying air containing matter which collects on the interior surface of the flue, a washing apparatus for the system comprising:

A. a first swivel joint adapted for the passage of fluid mounted on one end of the flue and connected to a source of washing fluid under pressure;

B. a second swivel joint mounted on the end of the flue opposite to said one end and defining with the first joint a common rotational axis extended centrally longitudinally of the flue;

C. a plurality of tubular conduits extending within the flue between the swivel joints parallel to said axis and spaced from the axis toward the interior surface of the flue, each conduit having a plurality of outwardly directed orifices spaced therealong and individually angularly related to radii of their respective conduits;



D. fluid conducting first bracket means rotatably mounted on the second swivel joint fixedly connecting the conduits adjacent thereto; and

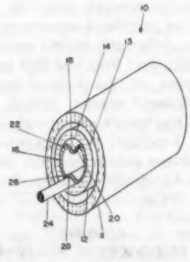
E. fluid conducting second bracket means rotatably mounted on the first swivel joint fixedly connecting the conduits adjacent thereto and adapted to supply washing fluid from the first joint to the conduits for emission through the orifices reactively to urge the conduits together with the first bracket means and the second bracket means to rotate about the axis to wash the collected matter from the interior surface.

4,259,946

SOLAR COLLECTOR

Vincent P. Roehm, Landisville, Pa., assignor to Thermacore, Inc., Lancaster, Pa.

Filed Oct. 22, 1979, Ser. No. 86,766
Int. Cl.³ F24J *3/02;* **F28F** *1/00*
U.S. Cl. 126—443 **4 Claims**



1. In a solar collector of cylindrical construction wherein an inner conducting sleeve is mounted within a cylinder and a heat transfer pipe is attached to the inner conducting sleeve,

said inner conducting sleeve having a split oriented parallel to its axis and its outer cross sectional circumference less than the inner cross sectional circumference of the cylinder into which it is mounted and a reentrant partial cylinder formed in said inner conducting sleeve with an inner diameter approximating the outer diameter of the heat transfer pipe; and with the heat transfer pipe positioned within said reentrant partial cylinder the improvement wherein:

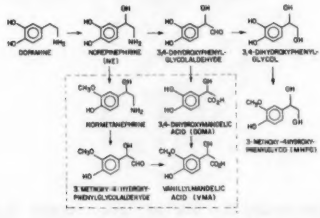
a spring clip means is fitted into the split in the inner conducting sleeve to expand the inner sleeve against the inner surface of the cylinder and clamp the heat transfer pipe within the reentrant partial cylinder.

4,259,947

METHOD FOR MEASUREMENT OF THE NEUROCHEMISTRY OF THE BRAIN

Peter C. Kobrinsky, 724 Calabria Dr., Santa Barbara, Calif. 93105

Filed Nov. 13, 1979, Ser. No. 93,760
Int. Cl.³ A61B *19/00*
U.S. Cl. 128—1 R **18 Claims**



1. A method for obtaining an indication of the brain norepinephrine activity of a human subject, comprising:

a first step of collecting first body fluid samples for measuring therefrom the body levels of 3-methoxy-4-hydroxyphenylglycol and vanillylmandelic acid;

a second step of intravenously injecting a non-radioactive isotope-labelled norepinephrine into the peripheral nervous system;

a third step of collecting second body fluid samples for measuring therefrom the levels of heavy isotope labelled 3-methoxy-4-hydroxyphenylglycol and vanillylmandelic acid;

a fourth step of determining the relative concentrations of heavy isotope-labelled 3-methoxy-4-hydroxyphenylglycol and of heavy isotope-labelled vanillylmandelic acid from said second samples and preparing a ratio of the relative concentrations from said determinations that indicates the relative degree of conversion of norepinephrine into 3-methoxy-4-hydroxyphenylglycol and into vanillylmandelic acid in the peripheral nervous system; and

a fifth step of using the ratio and the measured body level of vanillylmandelic acid from said first sample to determine the contribution of 3-methoxy-4-hydroxyphenylglycol from the peripheral nervous system, and obtaining an indication of the brain's norepinephrine activity by deducting the 3-methoxy-4-hydroxyphenylglycol of the peripheral nervous system from the measured body level of 3-methoxy-4-hydroxyphenylglycol of the first sample.

4,259,948

ENDOSCOPIC SYSTEM

Peter Urban, 402 Franklin, River Forest, Ill. 60305

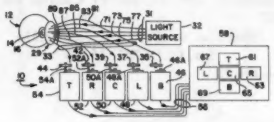
Filed Nov. 13, 1978, Ser. No. 959,804
Int. Cl.³ A61B *3/12, 1/04*
U.S. Cl. 128—6 **10 Claims**

1. An endoscopic system adapted to examine a cavity of the body and, in particular, the surface of the inner eye, said system comprising:

means for illuminating the inner eye surface;

a support member having a concave front face adapted to be directed toward the eye;

a plurality of lenses mounted on said face in spaced-apart relationship with their optical axes aligned to intersect within the eye in a manner such that when said concave face is directed towards the surface of the inner eye said lenses receive multiple distinct and partially overlapping images of adjacent portions of the inner surface of the eye;



a light conducting means associated at one of its ends with said plurality of lenses for transmitting said multiple images; and

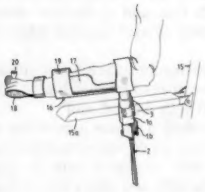
a camera means for receiving said multiple images transmitted from the other end of said light conducting means and for displaying said multiple images.

4,259,949

ANTI-FRICTION SCREW AND NUT ASSEMBLY

Robert Axelsson, Huskvarna, Sweden, assignor to Een-Holmgren Ortopediska AB, Sweden

Filed Feb. 6, 1979, Ser. No. 9,898
Claims priority, application Sweden, Feb. 8, 1978, 7801490
Int. Cl.³ A61F *5/10*
U.S. Cl. 128—77 **10 Claims**



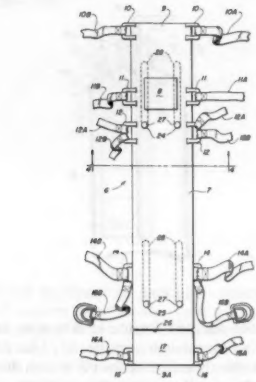
1. An orthosis arranged to be attached to an external support, said orthosis comprising: a rigid support for a body part; means for keeping the body part in place in said support; guiding device attached to said support, wherein said guiding device comprises an anti-friction screw and nut assembly, in which the nut comprises two interconnected nut portions being rotatable but not axially displaceable relative to each other, each nut portion having an axial bore for receiving said screw, and at least two anti-friction bearings arranged symmetrically with respect to said bore, each bearing being arranged to contact one thread groove of said screw.

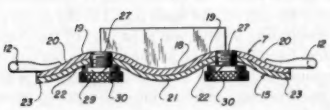
4,259,950

EXTRICATION BACK BRACE

Allen P. Klippel, Omaha, Nebr., assignor to Rescue Products, Inc., St. Louis, Mo.

Filed Mar. 7, 1979, Ser. No. 18,159
Int. Cl.[3] A61F 5/04, 13/00
U.S. Cl. 128—89 R 8 Claims





1. In a back brace a pair of panels, each having a substantially centered longitudinally extending valley disposed between and parallel with longitudinally extending crests raised at each side of said valley, said valley and crests being segments of curved surfaces and said crests having laterally extending and downwardly and laterally outwardly directed flanges forming opposite longitudinal margins of said panels, and said panels being nested with said valleys and crests in overlying relation, said pair of panels having means located in said crests for permitting extension of one panel relative to the other such that said pair of panels may slide relative to each other so as to assume a first shortened telescoped position and other positions in which said panels are moved to predetermined extension positions, said last means including longitudinally directed slots in one panel and cooperating elements on said other panel projecting through said slots, releasible clamping means engaged on said elements for securing said pair of panels in said first position and in said predetermined extension positions, and flexible means carried by said pair of panels in positions for securing said panels to the head and torso of a person, whereby the head and torso of a person is substantially immobilized with the spine stabilized in said valley between said crests.

4,259,951

DUAL VALVE FOR RESPIRATORY DEVICE

Milton P. Chernack, West Hempstead, and Mishel Greenberg, New Hyde Park, both of N.Y., assignors to Chesebrough-Pond's Inc., Greenwich, Conn.

Filed Jul. 30, 1979, Ser. No. 62,162
Int. Cl.[3] A61M 16/00
U.S. Cl. 128—200.14 7 Claims

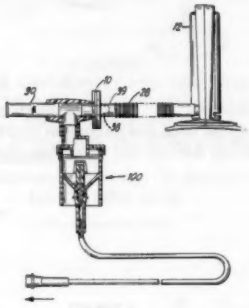
6. In an inhalation device having an outlet tubing having one end connected to the outlet of the device and a mouthpiece connected to the other end of said tubing, a dual valve for inhalation and exhalation connected in said tubing which permits air to be withdrawn from the device upon inhalation but which prevents the flow of air into the device upon exhalation, comprising:

one disk having a central opening in communication with said tubing and said device, valve seat means operatively connected to the periphery of said central opening, and a plurality of openings about said central opening in communication with the surrounding environment,

another disk having a central opening in communication with said tubing and said mouthpiece, a plurality of openings about said central opening in communication with said tubing and said mouthpiece, and a plurality of valve seats operatively connected to the periphery of each of said outer openings,

said disks being juxtaposed to one another with said central openings and outer openings in axial alignment,

a flexible disk between and in contact with said disks including a central, flexible flapper valve which extends across said central openings and seats on said valve seat means to control the flow of air therethrough, and a plurality of outer flexible flapper valves which extend across said



outer openings and seat on said plurality of valve seats, respectively, to control of flow of air therethrough, said central opening in said another disk being of a size to allow said central flexible flapper valve to pass therethrough and each of said one disk being of a size to allow said outer flexible flapper valves to pass therethrough,

connecting means for connecting said disks between the tubing and mouthpiece with said one disk in communication with the device through the tubing and with said another disk in communication with said mouthpiece,

wherein said central flexible valve is urged from said central valve seat to open said central openings upon inhalation to allow the flow of air from the inhalation device while said outer flexible flapper valves close said outer openings, and

wherein said outer flexible flapper valves are urged from their seats to open said outer openings upon exhalation to exhaust air to the surrounding atmosphere upon exhalation while said central flexible flapper valve closes said central openings and prevents the flow of air into the inhalation device, to thereby inhibit excessive carbon dioxide and water vapor build up therewithin.

4,259,952

BLOOD DILUTING METHOD AND APPARATUS

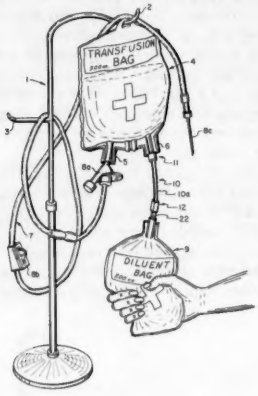
Donald R. Avoy, 8 Hollywood Ave., Los Gatos, Calif. 95030

Filed Jun. 22, 1978, Ser. No. 918,279
Int. Cl.[3] A61M 5/00
U.S. Cl. 128—214 D 8 Claims

1. An apparatus for administering a diluent to a quantity of red blood cells contained in a transfusion blood container having an input port and an output port for transfusing a patient comprising:

a flexible, squeezable diluent bag for containing a diluent for red blood cells;

means for providing a permanent fluid-tight connection between said diluent bag and said input port of said transfusion blood container in a fluid-tight manner; and



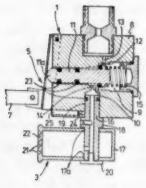
means forming a check valve means for preventing a back flow of fluid from said transfusion blood container to said diluent bag through said connecting means.

4,259,953

APPARATUS FOR DISPENSING A LIQUID EYEWASH

Anthony Shaw, 1 Marlborough St., Upper Hutt, New Zealand

Filed Aug. 20, 1979, Ser. No. 67,945
Int. Cl.[3] A61M *1/00*
U.S. Cl. 128—233 **12 Claims**



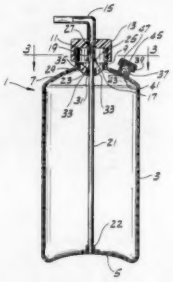
1. An apparatus for dispensing a liquid eyewash in an emergency to a person's eyes, comprising a supply of liquid, spray means arranged to disperse the liquid in a jet into said person's eyes, a valve connected to said supply of liquid and arranged to deliver the liquid to said spray means, guide means arranged adjacent the valve and said spray means, said guide means being arranged to provide a correct head position for said person in relation to the spray means, control means arranged to operate the valve to release a liquid into the spray means, wherein the valve is a plunger operated valve and the control means comprises a pivotal lever arm mechanism coupled to the plunger of the valve, and the said pivotal lever arm mechanism is arranged to move in response to pressure being applied to said guide means.

4,259,954

WASH BOTTLE AND METHOD FOR AMELIORATING HEMORRHOIDS

Robert S. Scott, 67C Joyce Ellen La., Ferguson, Mo. 63135

Filed Sep. 19, 1979, Ser. No. 77,005
Int. Cl.[3] A61M *7/00*
U.S. Cl. 128—248 **18 Claims**



1. A wash bottle adapted for use in irrigating body tissue surfaces comprising a container constituted of flexible resilient material having a mouth, a closure for the mouth detachable to permit filling of the container with a wash liquid, a nozzle on said closure for delivery of wash liquid from the container, conduit means inside the closure and in communication with the nozzle for delivery of wash liquid to the nozzle, and valve means comprising a valve seat at an inlet of said conduit means and a stem fixedly attached at one end to a portion of a wall of the container and having a free end engageable with the valve seat to prevent entry of liquid into the conduit means from the interior of the container when the container is in an unstressed condition, said portion of the wall being movable outwardly on squeezing the container to move the stem away from the seat, thereby opening the conduit means to the interior of the container and resulting in delivery of wash liquid out through the conduit means and nozzle when the bottle is in an inverted position.

4,259,955

APPLICATOR SWAB AND METHOD OF MAKING THE SAME

Barbara Ritter, 235 E. 87 St., New York, N.Y. 10028

Filed Jul. 31, 1978, Ser. No. 929,324
Int. Cl.[3] A61M *35/00*
U.S. Cl. 128—269 **5 Claims**

1. A swab comprising an elongated support having a length in the order of magnitude of about 3½ inches, and a swabbing head on a portion of said support at one end of the latter, said head being of knit terry pile and including a foundation of cut jersey, said support and head being of U-shape, said U-shape having a bight, said head being located at the bight, said head including opposing sections in face-to-face relationship.

4,259,956

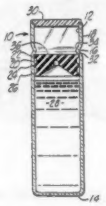
CERTI-SEAL

Robert W. Ogle, Newport Beach, Calif., assignor to IMS Limited, South El Monte, Calif.

Continuation of Ser. No. 239,225, Mar. 29, 1972, abandoned, which is a continuation of Ser. No. 44,511, Jun. 8, 1970, abandoned. This application Sep. 21, 1976, Ser. No. 725,185

Int. Cl.[2] **A61J** *1/06*

U.S. Cl. 128—272 **2 Claims**



1. A novel medicament package containing an aqueous solution of sodium bicarbonate, such package comprising a shell vial having cylindrical walls and an open end and a closed end, within said vial an inwardly extending annular shoulder integral with said cylindrical walls of said vial, said shoulder forming an annular indentation on the exterior of the walls of said vial, the approach to said shoulder being sharper on the inward side than on the outward side of said shoulder, said cylindrical walls extending from the approach on the inward side of said shoulder to said closed end and from the approach on the outward side of said shoulder to said open end, said shoulder being in proximity to the open end of said vial, an imperforate resilient stopper sealing the open end of said vial, the side of the stopper facing the closed end of the vial being provided with a generally concave surface, the peripheral portion of that side of the stopper facing the open end of the vial forming a seal on the inner surface of said shoulder to prevent the outward movement of said stopper within said vial under the influence of the vapor pressure of said solution of sodium bicarbonate, said stopper being adapted to reciprocate in a piston-like fashion to the closed end of said vial to expel the contents thereof through a hollow needle when said stopper has been punctured by said needle.

4,259,957

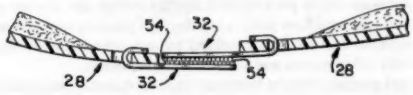
FASTENING MEANS FOR DIAPERS

Gerard G. Sonenstein, Yardley, Pa., and James A. Kaeser, Somerset, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 634,978, Nov. 24, 1976, abandoned. This application Mar. 21, 1978, Ser. No. 888,717

Int. Cl.[3] **A61F** *13/16;* **A41B** *3/02*

U.S. Cl. 128—287 **1 Claim**



1. A disposable substantially rectangular multilayer diaper comprising a water impervious outer layer, an absorbent core layer and a water pervious inner, layer, said inner layer forming an inner surface for direction toward the body of an infant, said diaper being defined by opposed lateral and longitudinal edges, the junctures of said edges further defining four corner portions, said corner portions each having an aperture therein which is detachably engagable by mating first and second cooperative fastener means, each of said fastener means is comprised of an integral combination of an engagement member and a securement strip, said members being fabricated from a hard tooling polymeric resinous material so as to be generally T shaped and having an inward and an outward facing surface; the stem of said T shaped member being formed into a hook member which protrudes from the inward facing surface of said engagement member; said securement strip comprising a myriad of finely woven filaments which are formed into permenent hooks, and said strip is attached to the inward facing surface of said T shaped member of said first fastener means and is approximately coterminous with the cross-bar portion of said T shaped member; when said hook member of said first fastener means is engaged in said apertures, the cross-bar of said T shaped member is positionable so as to extend substantially outward from each corner portion of a lateral edge of said diaper; said strip is attached to the outward facing surface of said T shaped member of said second fastener means and is approximately coterminous with the cross-bar portion of said T shaped member; said second fastener means also being positionable so as to extend substantially outward from each corner portion of a second lateral edge, said strips on said first and second fastener means being detachably engageable so as to provide a securement of said diaper about the body of a wearer of said diaper.

4,259,958

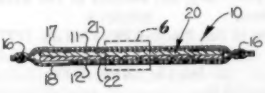
MULTI-LAYER ABSORBENT PAD FOR DISPOSABLE ABSORBENT ARTICLES AND PROCESS FOR PRODUCING SAME

Reid C. Goodbar, Ware Shoals, S.C., assignor to Riegel Textile Corporation, Greenville, S.C.

Filed Jun. 6, 1979, Ser. No. 46,113

Int. Cl.[3] **A41B** *13/02*

U.S. Cl. 128—287 **12 Claims**



1. A multi-layer absorbent pad construction for use in disposable absorbent articles, such as diapers and the like, to absorb body fluids and comprising superimposed top and bottom layers operatively associated with each other and being characterized by providing superior fluid transfer from said top receiving layer to said bottom layer and wicking and spreading action of the body fluids within said bottom layer to provide a drier top surface to said absorbent pad;

said top layer comprising an uncompressed batt of fiberized cellulosic fibers having a cationic debonding agent therein provided prior to fiberization for obtaining more complete fiberization of said fibers and greater height and loft to said batt while producing resistance to normally-occurring hydrogen bonds between said fibers in said batt to resist compression of said batt and maintain the height and loft for said absorbent pad construction; and

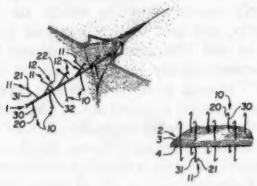
said bottom layer comprising a compressed batt of fiberized cellulosic fibers without a cationic debonding agent therein having substantially greater fiber density than said top layer and having normally-occurring hydrogen bonds between said fibers due to the absence of said debonding agent for improved fluid wicking and spreading action;

whereby, body fluids will be received and passed through said uncompressed top layer in a relatively small area thereof and will be wicked and spread out in a larger area of said compressed bottom layer.

4,259,959
SUTURING ELEMENT

Wesley W. Walker, 1253 Carrell La., Napa, Calif. 94558

Filed Dec. 20, 1978, Ser. No. 971,626
Int. Cl.[3] A61B 17/08
U.S. Cl. 128—337 6 Claims



1. A suturing element comprising:
a backbone where said backbone is a relatively thin strip of material having flat upper and lower surfaces;
a first set of hooks extending substantially perpendicularly from the upper surface in a first direction;
a second set of hooks extending from the lower surface in a second direction, said first and second directions being opposite to each other;
each of said hooks having a stem and means for snagging tissue;
said snagging means of said first set of hooks being aligned in a third direction and said snagging means of said second set of hooks being aligned in a fourth direction; and
substantially all of said directed snagging means on a given side of said thin strip lie in a plane which is substantially parallel to the adjacent surface of said thin strip.

4,259,960
CATHETER WITH NON-ADHERING BALLOON

Glenn N. Taylor, Cary, Ill., assignor to The Kendall Company, Boston, Mass.

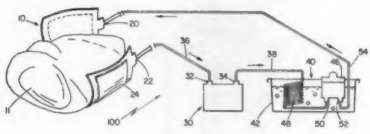
Continuation of Ser. No. 846,291, Oct. 28, 1977, abandoned.
This application Oct. 15, 1979, Ser. No. 85,177
Int. Cl.[3] A61M 25/00
U.S. Cl. 128—349 B 4 Claims

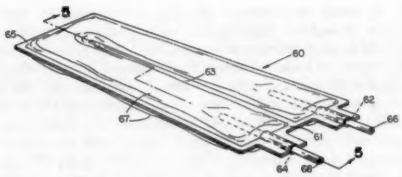
1. A catheter, comprising:
an elongated shaft having a main lumen, an inflation lumen extending along the shaft, and an outer surface;
an annular sleeve of elastic material joined to the shaft in spaced first and second circumferential zones defining a cavity intermediate said sleeve and shaft, said inflation lumen communicating with the cavity to inflate said sleeve, and said sleeve having an inner surface facing toward a region of said outer surface of the shaft underlying the sleeve, with said surface region of the shaft being substantially smooth; and
said sleeve having a plurality of inner spaced circumferential ridges having inner surfaces facing toward the outer surface region of the shaft, said ridges defining a plurality of circumferential recesses having surfaces intermediate the ridge inner surfaces, with the inner surfaces of said ridges contacting the outer surface region of the shaft until use of the catheter, and said ridges having a sufficient width relative to the width of the recesses to prevent contact of the recess surfaces with the outer surface region of the shaft when the ridge inner surfaces contact the outer surface region of the shaft.

4,259,961
COOLING PAD

Andrew G. Hood, III, 34877 Forest Estates Rd., Evergreen, Colo. 80489

Filed Jan. 24, 1979, Ser. No. 6,180
Int. Cl.[3] A61F 7/00, 7/12
U.S. Cl. 128—400 8 Claims





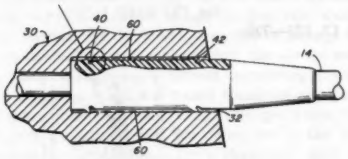
1. An apparatus for cooling a body organ such as a heart, said apparatus including a cooling pad for surrounding said body organ and a pump for circulating a cooling liquid through said pad, the improvement wherein
said pump is arranged with respect to said pad so as to place the liquid inside said pad under negative pressure, and
said cooling pad comprises,
an upper flexible sheet,
a lower flexible sheet,
said sheets having an areawise extent suitable for partially surrounding said organ,
said sheets being suited for contact with said body organ and with body fluids, and
said sheet being liquid impermeable and sealed at their peripheral edges to form a bag,
an inlet tube means sealed to said bag for transferring cooling liquid under negative pressure into said bag,
an outlet tube means sealed to said bag at a location spaced from said inlet tube means for transferring said liquid from said bag.
porous and flexible filler element filling the inside of said bag in the space between said upper and lower sheets,
the locations of said tube means together with said sheets defining a flow path for said liquid through the interior of said bag, said flow path being through pores in said porous element and being unconfined by any tube between said inlet tubes means and said outlet tube means,
said porous element being selected to maintain separation between said sheets, and thereby maintain said flow path, when the walls of said bag are squeezed toward each other as the result of said bag being filled with said liquid under negative pressure and being conformed around said organ, and
said porous element, the material from which said sheets are made, and the dimensions of said sheets being selected to permit said bag to retain its shape surrounding said organ when filled with said liquid under negative pressure.

4,259,962

SEALING SYSTEM FOR CARDIAC PACER LEAD CONNECTOR

Charles A. Peers-Trevarton, Coral Springs, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Aug. 24, 1979, Ser. No. 69,535
Int. Cl.³ A61N *1/00*
U.S. Cl. 128—419 P **8 Claims**



1. A cardiac pacer lead assembly for use with a cardiac pacer apparatus having an electrical terminal at the inner end of a cylindrical bore for reception of an electrical lead, comprising:

a generally tubular connector means for insertion into said cylindrical bore, through which may be disposed an electrical lead for connection to said terminal,

said connector means having a resiliently deflectable ring on the exterior of said connector means, said ring having an outside diameter in an undeflected position greater than the inside diameter of said bore,

said connector means further defining an annular groove means outwardly immediately adjacent said ring having an inside diameter less than that of said tubular connector means

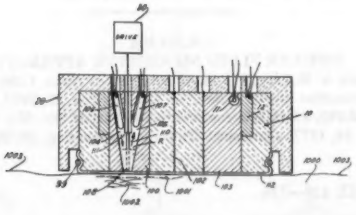
said ring being deflectable over said groove means upon insertion of said connector means into said cylindrical bore.

4,259,963

MULTI-PURPOSE TRANSDUCER FOR TRANSCUTANEOUS BLOOD MEASUREMENTS

Albert Huch, Kugelgasse 1, 3550-Marburg, Fed. Rep. of Germany

Filed Jul. 3, 1979, Ser. No. 54,600
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—635 **12 Claims**



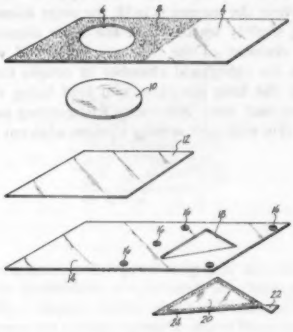
1. An improved blood-gas concentration transducer of the type employed for the transcutaneous measurement of blood-gas concentration and blood flow rate and comprised of reference and measuring electrodes and having a face which is laid against the tissue of interest for transcutaneous measurement, the improvement comprising light-emitting means operative for emitting light from said face for incidence onto the tissue against which said face of the transducer is laid, and photodetector means operative for receiving light transmitted in the direction towards said face of the transducer from the tissue against which said face is laid.

4,259,964

DEVICE FOR OBTAINING STOOL SAMPLES

Robert A. Levine, 31 Pilgrim La., Guilford, Conn. 06437

Filed Jul. 9, 1979, Ser. No. 55,636
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—638 **10 Claims**



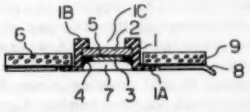
1. A biological material sampling device for receiving and transporting material samples, said device comprising: a sheet of pliant impermeable material; absorbent means on said sheet for receiving a biological material smear; securement means disposed on said sheet and positioned to surround said absorbent means when said sheet is folded whereby said sheet can be folded onto said securement means to form a sealed impermeable pouch containing said absorbent means after reception of a biological material smear on said absorbent means; and means for opening said pouch for exposing said absorbent means for analysis of said biological material smear.

4,259,965

SKIN ELECTRODE

Kotaro Fukuda, Tokyo; Yosinori Okamoto, Fujimi; Masakatsu Shimada, Iwatsuki; Toshiaki Kato; Katsuhiko Tabuchi, both of Chiba; Makoto Shimura, Yokosuka, and Takashi Fujiwara, Nagareyama, all of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Mar. 23, 1979, Ser. No. 23,287
Claims priority, application Japan, Mar. 29, 1978, 53-40562[U]
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—640 **4 Claims**



1. In a skin electrode for connecting monitoring equipment to the skin of a patient comprising a base assembly mountable to the skin having a disc-shaped sensing element held in an insulating plastic case for detecting bio-potentials from the skin and transforming them into electrical signals, and a terminal assembly detachably secured to the base assembly and having a lead for connection to the monitoring equipment for transmission of the electrical signals, the improvement wherein the plastic case of the base assembly comprises a cylindrical tubular case, said base assembly further including a disc-shaped ferromagnetic element secured in said cylindrical tubular case in electrical contact with and superimposed on the sensing element with said sensing element disposed on one side of said ferromagnetic element adapted to be positioned near the skin

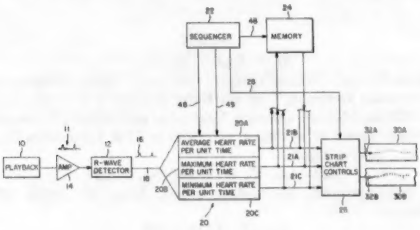
so that a cylindrical chamber is defined by said tubular case and ferromagnetic element on the other side of the ferromagnetic element adapted to be remote from the skin, said terminal assembly comprising a disc-shaped magnet and a cylindrical yoke disposed in said chamber in magnetic attraction engagement with said ferromagnetic element, said yoke surrounding said magnet and having a depression open toward the base assembly where the magnet is held, the outer diameter of the yoke being slightly smaller than the inner diameter of the cylindrical chamber of the base assembly, said yoke being disposed in the cylindrical chamber to couple the terminal assembly to the base assembly, said lead being electrically connected to said yoke; and means for securing said tubular case to the skin with said sensing element adjacent the skin.

4,259,966

HEART RATE ANALYZER

Robert L. Cannon, Waltham, and Andrew J. Griffin, Framingham, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Aug. 22, 1979, Ser. No. 68,845
Int. Cl.³ A61N 5/04
U.S. Cl. 128—706 **4 Claims**



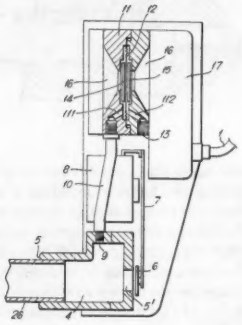
1. A heart rate analyzer comprising means responsive to the R-wave of successive ECG complexes of a patient for generating signals coincident with the ocurrence of each of said R-waves, first means responsive to said R-wave signals for counting each interval between successive R-wave signals, first means responsive to said counting means for continuously summing said intervals for a first number of successive R-wave signals and for generating first electrical representations of the average of said intervals over said first number of successive R-waves, said first number of successive R-waves being no greater than two, second means responsive to said counting means for continuously summing said intervals for a second number of R-waves greater than said first number and for generating second electrical representations of the average of said intervals over said second number of successive R-waves, means for tracking said first and second representations and for holding at least a maximum value of said first representation and a minimum value of said second representation, means responsive to said maximum and minimum values for converting said values to minimum and maximum heart rates respectively, and second means for counting each said R-wave signal generated over a predetermined unit of time.

4,259,967

APPARATUS FOR THE DETERMINATION OF RESPIRATORY PARAMETERS

Pieter H. Vooren, Noordwijkerhout, and Klaas H. van der Plas, Katwijk aan Zee, both of Netherlands, assignors to Vitalograph (Ireland) Limited, Lifford Ennis, Northern Ireland

Filed Dec. 8, 1978, Ser. No. 967,885
Claims priority, application United Kingdom, Dec. 9, 1977, 51260/77
Int. Cl.³ A61B 5/08
U.S. Cl. 128—720 **6 Claims**



1. Apparatus for measuring the respiratory resistance of a patient, said apparatus comprising:

(a) a body part formed with a passageway for receiving a flow of air produced by an exhalation by the patient,

(b) a normally open, closable valve operable and arranged, when open, to permit passage of said flow through said passageway and, when closed, substantially to halt said flow,

(c) actuating means responsive to receive opening and closing signals to open and close said valve,

(d) means, including a pressure transducer responsive to the pressure of flow in said passageway, for providing said actuating means with a closing signal to close said valve when said pressure reaches a predetermined level during exhalation, and an opening signal subsequent to said closing signal to reopen said valve during said exhalation, and

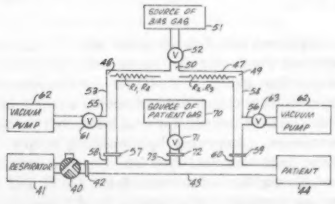
(e) means responsive to the output of said transducer generating a flow signal representing the rate of flow of said flow of air when said valve is reopened.

4,259,968

BIPOLAR FLUID MEASURING APPARATUS

Jerome A. Rodder, 775 Sunshine Dr., Los Altos, Calif. 94022

Continuation-in-part of Ser. No. 809,302, Jun. 23, 1977, Pat. No. 4,163,390, which is a continuation-in-part of Ser. No. 787,467, Apr. 14, 1977, abandoned. This application Aug. 24, 1978, Ser. No. 936,380
Int. Cl.³ A61B 5/08
U.S. Cl. 128—724 **16 Claims**



1. A spirometer comprising a breath transmission passage having first and second ends; an elongated conduit having a

first port at one end, a second port at the other end, and a third port intermediate to the first and second ports to form a first flow measurement passage in the conduit between the first and third ports and a second flow measurement passage in the conduit between the second and third ports; first means for interconnecting the breath transmission passage at a point near the first end to the first port, the first interconnecting means comprising a first connecting conduit between the first port and the breath transmission passage and first means for withdrawing fluid from the first port at a given flow rate; second means for interconnecting the breath transmission passage at a point near the second end to the second port, the second interconnecting means comprising a second connecting conduit between the second port and the breath transmission passage and second means for withdrawing fluid at the given rate from the second port; a source of bias gas connected to the third port; and means for generating a signal dependent upon the difference between the rate of gas flow through the first and second flow measurement passages responsive to patient inhalation from and exhalation to the breath transmission passage, characterized in that the flow resistance between the first end of the breath transmission passage and the third port approximately equals the flow resistance between the second end of the breath transmission passage and the third port, thereby balancing the signal generating means in the absence of flow through the breath transmission passage.

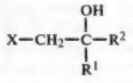
4,259,969

SMOKING COMPOSITIONS

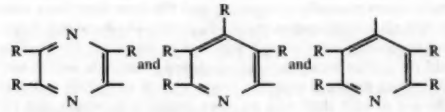
Yoram Houminer, and Edward B. Sanders, both of Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Jan. 31, 1979, Ser. No. 8,013
Int. Cl.³ A24B *15/38*
U.S. Cl. 131—278 **25 Claims**

1. A smoking composition comprising an admixture of (1) combustible filter selected from the group consisting of natural tobacco, reconstituted tobacco and non-tobacco substitutes, and (2) between about 0.0005 and 2 weight percent, based on the total weight of filter, of a substituted heterocyclic compound corresponding to the formula:



wherein X is selected from pyrazine and pyridine radicals corresponding to the chemical structures:



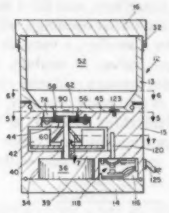
where R is a substituent selected from hydrogen and methyl; R^1 is a substituent selected from hydrogen and alkyl groups containing between 1 and about 10 carbon atoms; R^2 is a substituent selected from aliphatic, alicyclic and aromatic groups containing between 1 and about 12 carbon atoms, and any heteroatom present in the R^2 group is either oxygen or nitrogen; and R^1 and R^2 when taken together with connecting elements form an alicyclic structure.

4,259,970

SMOKE GENERATING AND DISPENSING APPARATUS AND METHOD

William D. Green, Jr., 8906 Camden St., Alexandria, Va. 22308

Filed Dec. 17, 1979, Ser. No. 104,701
Int. Cl.³ A24F *1/10, 47/00*
U.S. Cl. 131—330 R **17 Claims**



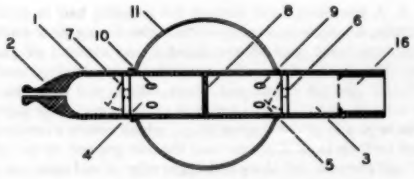
1. In an apparatus for generating and dispensing smoke produced by combustion of solid material, a housing having a smoke outlet, a hopper within which said material is a stored, gas flow means for conveying said material from the hopper to the outlet, gas permeable means for blocking flow of the material to the outlet, and burner means mounted in operative relation to the gas permeable means for combustion of the material accumulated upstream on the gas permeable means producing smoke displaced through the gas permeable means.

4,259,971

CIGARETTE SMOKING DEVICE

Ralph H. Orter, P.O. Box 2074, Prescott, Ariz. 86302

Filed Dec. 18, 1978, Ser. No. 970,634
Int. Cl.³ A24F *13/02*
U.S. Cl. 131—178 **1 Claim**



1. A dual purpose cigarette smoking holder consisting of a hollow body, a mouthpiece on one end of said body, a cigarette holder on the other end of said body, a body chamber positioned between said mouthpiece and said cigarette holder, an inlet check valve positioned between said cigarette holder and said body chamber, an outlet check valve positioned between said mouthpiece and said body chamber, a baffle divider between said outlet check valve and said inlet check valve, body chamber outlet openings positioned between said inlet check valve and baffle divider, body chamber inlet openings between said outlet check valve and said baffle divider, a press-fit metal insert within said cigarette holder to engage cigarette and protect said holder in event cigarette burns up completely; a resilient hollow collapsible member, having an opening therethrough said collapsible member being removeably engaged around and upon said cigarette holder body enclosing said inlet and outlet openings, whereupon successive compressing and releasing of said removeable member, the outlet check valve and said inlet check valve alternately open and close creating a vacuum to draw smoke from the cigarette through the inlet check valve, into one divided portion of said body chamber, through the body chamber outlet openings into said collapsible

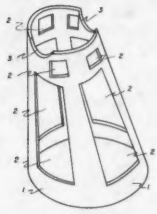
member, through said body chamber inlet openings into the other divided portion of said body chamber, through outlet check valve, through said mouthpiece to smoker, whereby said cigarette holder body functions as a manual operated cigarette smoking device; and further including a filter means, having an opening therethrough, said filter means adapted to removeably engage around and upon said holder body after said collapsible member is removed therefrom, said filter means enclosing said body chamber inlet and outlet openings, whereupon inhalation on the mouthpiece by a smoker, a vacuum is created opening outlet and inlet check valves in tandum, allowing smoke to flow from the cigarette through said inlet check valve, through one divided portion of said body chamber, through said outlet openings, through filtering material in said filter means; through said inlet openings into said other divided portion of said body chamber, and through said outlet check valve into the mouthpiece and to the smoker.

4,259,972

SUPPORT FOR DRYING HAIR

Domenico Spaccapaniccia, Via XX Giugno, 16 Fermo, Italy

Filed Jul. 20, 1979, Ser. No. 35,320
Claims priority, application Italy, May 16, 1978, 17906 A/78
Int. Cl.[3] A45D *20/00*
U.S. Cl. 132—9 **2 Claims**



1. A truncated cone element for gripping hair in position tightly, in order to notably reduce the drying time under a hairdrier hood, and characterized by an element of plastic material, in the form of a truncated cone having parallel, slightly oblique upper and lower edges, said cone having around its side surfaces a series of ventilation cutouts more or less large and of rectangular shape, which ensure a continuous and uniform flow of hot air over the hair gripped on the inside of said element, and along said upper edge of said cone, are two semicircular cutouts diametrically opposed, and adapted to receive a roller, which after a minimal wrapping at the end of a hair bunch, the roller is fixed in place by means of hair pins, clips or the like so that the hair thus treated has a substantially uncurled portion proximate to the scalp area and curled hair termini.

4,259,973

CLASP FASTENER

Pierre F. X. Seiller, Froulieu, Lagnieu (Ain), France

Continuation-in-part of Ser. No. 896,392, Apr. 14, 1978, Pat. No. 4,231,380. This application Dec. 11, 1979, Ser. No. 102,332
Claims priority, application France, Apr. 15, 1977, 77 11970
Int. Cl.[3] A45D *8/00*
U.S. Cl. 132—48 R **6 Claims**

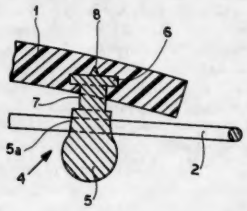
1. A retaining member for a spring clip comprising a unitary body formed with:

a generally ball-shaped head having a narrow portion;

a cylindrical neck connected to said head at said narrow portion and extending along an axis of said head;

a substantially planar base of generally square configuration connected to said neck in a plane perpendicular to said axis;

a point formed on said base along a side thereof turned away from said head; and



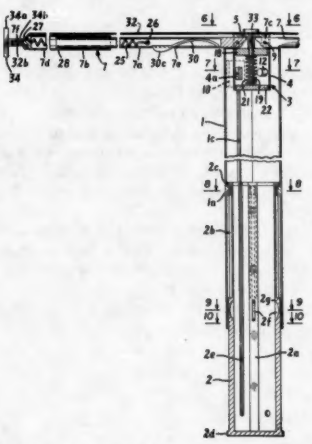
at least one groove lying in a plane perpendicular to said base and formed therein and in said neck at least to a portion thereof adapted to project out of a structure in which said base is to be embedded.

4,259,974

UMBRELLA

Harry R. de Polo, 480 Park Ave., New York, N.Y. 10022

Continuation-in-part of Ser. No. 896,572, Apr. 14, 1979, abandoned, which is a continuation-in-part of Ser. No. 796,439, May 12, 1977, Pat. No. 4,084,600. This application Sep. 25, 1979, Ser. No. 78,815
Int. Cl.[3] A45B *25/14*
U.S. Cl. 135—24 **23 Claims**



1. An umbrella comprising an elongate tubular shaft having upper and lower ends and a longitudinally extending slot between said ends, rib carrier means movable longitudinally in said shaft, a plurality of elongate ribs having inner and outer ends, means pivotally connecting said ribs near their inner ends to said rib carrier means, means fixed to said rib carrier means and projecting out through said slot in said shaft for moving said rib carrier means between a closed position in which said rib carrier means is near the lower end of said shaft and said ribs are in said shaft and an open position in which said rib carrier means is near the upper end of said shaft and said ribs radiate from said rib carrier means, latch means for releasably securing said rib carrier means selectively in said open and closed positions, means for retaining said ribs approximately normal to said shaft when in open position, a flexible cover secured at its center to said rib carrier means and at its periphery to outer ends of said ribs, said cover overlying and being supported by said ribs when in open position and being drawn down into said shaft with said ribs when in closed position, said

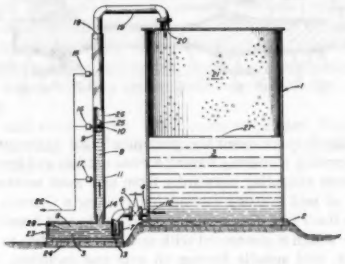
ribs being telescopically extendible and contractable and having a length when extended greater than the length of said shaft and a length when contracted less than the length of said shaft.

4,259,975

STOCK TANK GAUGER-LEVEL CONTROLLER

Ennis W. Kinsey, Jr.; Carlos Gonzalez, and James T. Cox, all of Andrews, Tex., assignors to Conoco, Inc., Ponca City, Okla.

Filed Apr. 16, 1979, Ser. No. 30,264
Int. Cl.³ G01F *23/10, 23/12*
U.S. Cl. 137—1 **19 Claims**



10. A method for gauging the level of a liquid in a liquid-containing tank comprising:

(a) positioning a fluid-tight reservoir below the range of levels to be gauged in the tank and in liquid communication from or near the bottom of the fluid-tight reservoir to the bottom of the tank at a point below the lowest level to be gauged in the tank,

(b) situating a vertically elongated vessel in bottom liquid communication with or near the upper portion of the reservoir and in top gaseous communication with the gas above the liquid in the tank providing a state of pressure equalization,

(c) positioning sufficient of a liquid which is substantially immiscible with and of less density than the liquid in the tank in the upper portion of the reservoir and into the vertically elongated vessel, and

(d) sensing the level in the vertically elongated vessel;

the vertically elongated vessel extending over the vertical interval of the surface elevations of columns of the liquid in the vertically elongated vessel that are equivalent to the surface elevations of like columns of the liquid in the tank over the range of liquid levels to be gauged in the tank and said range of liquid levels to be gauged being determinable by the level of the less dense liquid which is higher than the level of the more dense liquid.

4,259,976

METHOD FOR THE RECOVERY AND TRANSPORT OF THE CHEMICAL AND ENERGY VALUE OF LIGHT HYDROCARBONS

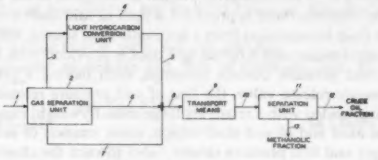
George D. Gould, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 563,743, Mar. 3, 1975, abandoned, which is a continuation-in-part of Ser. No. 359,831, May 14, 1973, abandoned. This application Oct. 20, 1977, Ser. No. 844,101
Int. Cl.³ F17D *1/16*
U.S. Cl. 137—13 **11 Claims**

1. A method for recovering and transporting the chemical and energy value of light hydrocarbons, which comprises:

(a) producing methanol from said light hydrocarbons;

(b) mixing all or part of said methanol with a viscous hydrocarbon oil; and



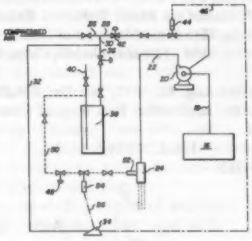
(c) transporting the resulting mixture of methanol and oil in a pipeline.

4,259,977

TRANSPORTATION AND PLACEMENT OF WATER-IN-OIL EMULSION EXPLOSIVES AND BLASTING AGENTS

James W. Brockington, Allentown, Pa., assignor to Atlas Powder Company, Dallas, Tex.

Filed Apr. 16, 1979, Ser. No. 30,426
Int. Cl.³ F17D *1/16*
U.S. Cl. 137—13 **19 Claims**



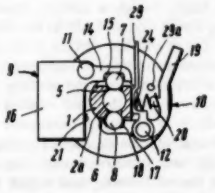
1. An improved method of pumping water-in-oil explosive emulsions within a conduit with a lubricating fluid moving as an annular stream around said explosive where the pumping is stopped and restarted, which comprises providing as said lubricating fluid an aqueous salt solution.

4,259,978

HYDRAULIC REGULATOR FOR GENERATION OF A DRIVING SPEED-DEPENDENT PRESSURE

Hartmut Möller, Isenbüttel, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Jan. 9, 1980, Ser. No. 110,614
Claims priority, application Fed. Rep. of Germany, Jan. 11, 1979, 2900853
Int. Cl.³ G05D *13/10*
U.S. Cl. 137—54 **4 Claims**



1. In a hydraulic pressure regulating device used to regulate

a speed-dependent pressure supplied to control means in an automatic automobile transmission, wherein a shaft is driven at a speed of revolution proportional to the speed of the automobile, wherein there is provided a duct in said shaft connected for fluid transmission from a hydraulic fluid source, and to said control means and wherein said duct is provided with first and second pressure control openings, each having a respective pressure release valve, the first of said pressure release valves being loaded with a relatively large-mass flyweight mounted to one axial end of said shaft which, upon rotation of said shaft, urges said first pressure release valve toward the closing position and the second of said pressure release valves being loaded with a relatively small flyweight mounted to said one axial end of said shaft which, upon said rotation, urges said second release valve toward the closing position, said second flyweight being provided with a spring which also urges said second flyweight and, consequently said second release valve, toward said closing position, the improvement wherein there is provided a third flyweight mounted to said one axial end of said shaft which, upon said rotation, acts on said spring to increase the closing force exerted on said second flyweight and thereby increases the closing force exerted on said second pressure release valve.

4,259,979

CLOSURE FIXTURE AND ASSEMBLY CAP

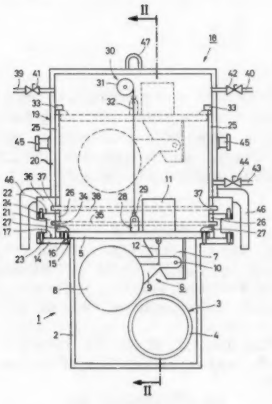
Uwe Reimpell, Hanau am Main; Reinhard Reiter, Gelnhausen, and Lutz Grein, Hanau am Main, all of Fed. Rep. of Germany, assignors to Leybold - Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Aug. 12, 1977, Ser. No. 824,202

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1976, 2637751

Int. Cl.³ F16K *43/00*

U.S. Cl. 137—315 **12 Claims**



1. In a closure fixture having a slide member or valve for radioactive and toxic media, a fixture housing, a movable mounted housing cover connectable to the housing via a first sealing surface, and a closure device with drive means arranged on the housing cover, the improvement wherein the fixture housing comprises a second sealing surface integral therewith and surrounding the first sealing surface and an assembly cap which is sealingly mountable on the second sealing surface and which has an interior configured to receive the housing cover and closure device for the disassembly thereof from the fixture housing and which comprises guide elements for guiding the movement of the housing cover between its connection at its first sealing surface on the fixture housing to an end position in the assembly cap.

4,259,980

BUTTERFLY VALVE ASSEMBLY AND METHOD OF MANUFACTURING THE SAME

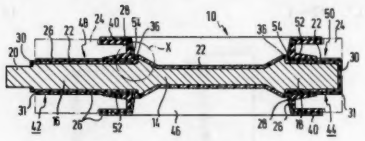
Fritz Müller, Am Bahnhof, D-7118 Ingelfingen-Criesbach, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 974,568, Dec. 29, 1978, abandoned. This application Jan. 24, 1979, Ser. No. 6,231

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2759000

Int. Cl.³ F16K *1/22*

U.S. Cl. 137—375 **5 Claims**



1. A check valve assembly, particularly for aggressive media, comprising a housing having a main section and two guiding sections extending outwardly from said main section, said sections of said housing having inner sides; a throttle valve having a throttling disc rotatably arranged in said housing and a spindle which is connected with said throttling disc to rotate the latter, said spindle having an axis and including a first portion extending outwardly beyond said housing, and a second portion axially spaced from said first portion, said first and second portions of said spindle being rotatably guided in said respectively guiding sections of said housing so as to allow rotation of said throttling disc; a protective jacket which is of one piece and which completely coats said throttling disc and said portions of said spindle; a protective lining which is of one piece and completely coats said inner sides of said main section and said guiding sections of said housing; and an elastic supporting lining which abuts against said protective lining and including a portion which urges the latter against said protective jacket in the region of said respective portions of said spindle in said guiding sections with simultaneous formation of a seal between said guiding sections and said respective spindle portions.

4,259,981

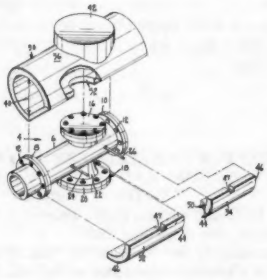
REMOVABLE INSULATED VALVE COVER

Richard O. Busse, 12863 Ingersoll, Hugo, Minn. 55038

Filed Sep. 24, 1979, Ser. No. 78,442

Int. Cl.³ F16L *59/16*

U.S. Cl. 137—375 **7 Claims**



1. An insulated valve cover for insulating a spence valve interposed in a fluid line which valve has a lower head housing ambient condition sensors and an upper head, which heads have an axis extending generally transverse to the axis, and on opposite sides of, a valve body, said axis extending in a direc-

tion in which fluids conducted through the line flow, comprising:

a substantially rigid main section, elongated in the direction of fluid flow and formed arcuately with respect to the axis of the valve body, said main section including an integral cap portion including an axis extending generally radially with respect to the axis of the valve body to enclose the upper head of the valve, and including a first arcuate edge circumferentially opposite said cap portion, and a second arcuate edge spaced from said first arcuate edge, and

a substantially rigid auxiliary section elongated in the direction of fluid flow and formed arcuately with respect to the axis of the valve body, said auxiliary section having a first arcuate edge and being removably disposed relative to said main section said auxiliary section further including a second arcuate edge, said auxiliary section respectively abutting said first and second respective arcuate edges of said main section to circumferentially enclose the valve body,

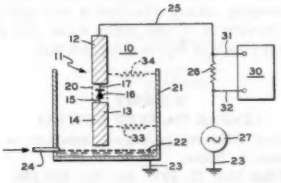
whereby said main section will remain suspended from said valve by said cap while said auxiliary section is positioned to complete said cover.

4,259,982

RESISTIVE FLUID DETECTING MEANS

James I. Bartels, Hudson, Wis., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 19, 1979, Ser. No. 95,721
Int. Cl.³ B01F *23/24*; G01F *23/00*
U.S. Cl. 137—392 **12 Claims**



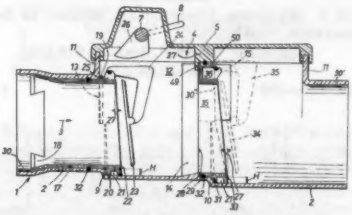
7. A resistive fluid level control system having a resistive fluid detecting means adapted to sense a resistive fluid level in a container and to in turn control said fluid level, including: a unitary probe means having a diode action and further having a plurality of conductive regions all of which are in said container and are submersible in said resistive fluid with said probe means being adapted to be connected to a source of bidirectional electric current; a first of said regions being an impedance capable of conducting said bidirectional electric current; a second of said regions being an impedance capable of conducting only a unidirectional portion of said bidirectional electric current; said first and said second regions being connected in electrical series and further connected in a series electrical circuit with said source of bidirectional electric current; and fluid level control means responsive to the absence of said current, the presence of said unidirectional portion of said bidirectional current, and the presence of said bidirectional current to control the level of said conductive fluid in said container.

4,259,983

CLEANOUT FITTING WITH LOCKABLE AND REMOVABLE CHECK VALVE

Bernhard Kessel, Ingolstädter Str. 20, 8073 Kösching, Fed. Rep. of Germany

Filed Dec. 8, 1978, Ser. No. 967,852
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1977, 2755177
Int. Cl.³ F16K *15/00*
U.S. Cl. 137—512 **14 Claims**



1. A cleanout fitting comprising:

a one-piece tubular body having relative to a normal direction of flow through said body an upstream end and a downstream end, said body being unitarily formed with an upwardly open well between said ends,

a downward upstream step adjacent said upstream end,

a downward downstream step within said well,

a downwardly U-shaped abutment at and concave toward said upstream step and forming therewith a downstream-facing upstream insert seat, and

a formation at and forming with said downstream step a U-shaped downstream seat open upwardly and away from said downstream step;

an insert snugly receivable in one of said seats; and

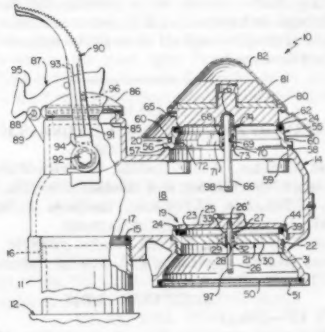
a cover sealingly engageable over said well.

4,259,984

VALVE CONSTRUCTION

Eugene B. Pemberton, Fairfield, and Richard L. Fahl, Cincinnati, both of Ohio, assignors to Dover Corporation, New York, N.Y.

Filed Oct. 31, 1978, Ser. No. 956,370
Int. Cl.³ F16K *15/06*
U.S. Cl. 137—533.31 **20 Claims**



1. A valve including a seat ring of a metallic material, a seat insert of a non-metallic material having a coefficient of expansion several times larger than the coefficient of expansion of the metallic material of said seat ring, means to lock said seat insert in said seat ring irrespective of whether said seat insert expands or contracts relative to said seat ring due to tempera-

ture change, elastic adhesive means adhering to said seat insert and said seat ring to seal said seat insert in said seat ring in its locked position, and closing means slidably supported by said seat ring and engageable with said seat insert to block flow through said seat ring, said closing means being movable to an open position when the pressure differential thereon produces a force exceeding the force exerted by said closing means.

4,259,985

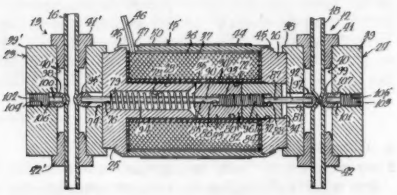
THREE-WAY SOLENOID-OPERATED PINCH VALVE ASSEMBLY

Warren C. Bergmann, Clinton, N.J., assignor to Brunswick Corporation, Skokie, Ill.

Filed Dec. 18, 1978, Ser. No. 970,446

Int. Cl.³ F16K *11/00*

U.S. Cl. 137—595 **11 Claims**



7. A solenoid-operated valve assembly comprising:

(a) a solenoid defining a central, open-ended passageway therethrough;

(b) plunger means nested within said passageway for movement in a first axial direction upon energization of said solenoid;

(c) biasing means for moving said plunger means in a second axial direction opposite said first direction upon deenergization of said solenoid;

(d) first and second fluid flow means disposed adjacent respective opposite ends of said solenoid in alignment with the open ends of said passageway;

(e) first fluid control means affixed on a first end of said plunger means for restricting the flow of fluid through said first fluid flow means upon movement of said plunger means in said first axial direction;

(f) second fluid control means affixed on a second end of said plunger means for restricting the flow of fluid in said second fluid flow means upon movement of said plunger means in said second axial direction; and,

(g) adjustment means for permitting the flow of fluid through each respective fluid flow means upon the restriction of the flow of fluid through the oppositely disposed fluid flow means.

4,259,986

CONTROL APPARATUS FOR A HYDRAULIC POWER CONSUMER

Edmund Maucher, Wooster, Ohio; Friedrich-Wilhelm Höfer, Ditzingen-Hirschlanden, and Günther Schwerin, Möglingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

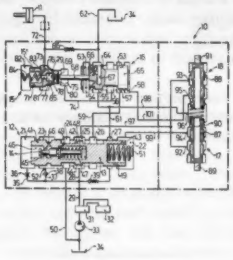
Filed Aug. 4, 1978, Ser. No. 930,979

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1977, 2735559

Int. Cl.³ F15B *13/043*

U.S. Cl. 137—596.12 **10 Claims**

1. A control apparatus for a hydraulic power consumer operable between a lowering position a neutral position and a lifting position, particularly for a hydraulic working unit on a mobile agricultural machine, said apparatus comprising a pressure medium reservoir; means for supplying a pressure medium from said reservoir; a check valve unit having a pilot operated check valve member, a consumer conduit and a working conduit, said pilot operated check valve member being responsive to the back pressure in said consumer conduit to hold said check valve member in its closed position; a control valve having an inlet chamber connected via an inlet conduit to said supplying means, a return chamber connected via an outlet conduit to said reservoir and a movable control valve member having a section for finely controlling the pressure medium flow between said inlet and return chambers, and means for operating said movable control valve; a pilot valve having a piston coupled to said check valve unit for controlling said pilot operated check valve member, an inlet space communicating with said inlet chamber of said control valve, means formed on said piston for balancing pressure from said inlet chamber, an outlet space communicating with said reservoir,



an intermediate chamber connected to said working conduit, and at least one pilot control chamber for pilot actuating the piston of said pilot valve; and magnetically activated quick-action preliminary control valve means controlling fluid flow to and from said control chamber and operable between a lifting position wherein said pilot valve connects said supplying means via said inlet space in said pilot valve and said working conduit to said consumer conduit, and a lowering position in which said preliminary valve means connects said supplying means to said control chamber of said pilot valve to displace said piston to move said pilot valve wherein said consumer conduit and said working conduit are connected to said outlet space; and damping means arranged in said pilot valve for damping the movement of said piston when said preliminary control valve means is in its lowering position.

4,259,987

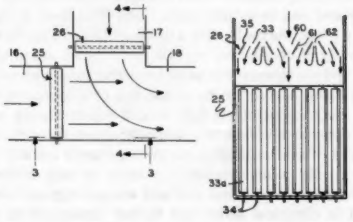
LINEAR DAMPER SYSTEM

John E. Janssen, Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 27, 1979, Ser. No. 108,190

Int. Cl.³ F16K *19/00*

U.S. Cl. 137—606 **4 Claims**



1. A damper system for controlling the flow of gaseous fluids through each of a plurality of separate ducts and combining the flow from said separate ducts in a manner which products substantially uniform mixing of the fluids from each of the several ducts, said system comprising:

at least a first damper means disposed in a first duct, said first damper means further comprising;

a plurality of damper blades pivotally mounted in substantially louvered fashion,

motivating means associated with said damper blades and adapted to pivot all of said damper blades simultaneously such that when said blades are held in a partially opened position said flow is divided into several parallel but separated substantially planar jets of fluid having alternate parallel and opposed passage flow characteristics and wherein the composite rate of flow of the damper system versus the angle of rotation of the damper blades is substantially linear over the full operating range,

a second damper means substantially similar to said first damper means disposed in a second duct which, with said first duct, converges such that the fluid flowing in said first duct s combined with that in said second duct;

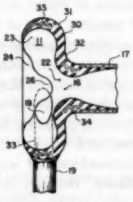
wherein said first and second dampers are disposed such that the shafts of said blades of said first and said second dampers are aligned such that the two groups of jet streams intermesh upon combination.

4,259,988

VORTEX-DIODE CHECK VALVE WITH FLEXIBLE DIAPHRAGM

Param I. Singh, Lexington, Mass., assignor to Avco Everett Research Laboratory, Inc., Everett, Mass.

Filed Sep. 17, 1979, Ser. No. 76,385
Int. Cl.³ F15C *1/16*
U.S. Cl. 137—812 **12 Claims**



1. A vortex diode for controlling flow of a fluid and having a circular side wall, a first end wall and a second end wall defining a short cylindrical working chamber, an axial inlet port entering axially through said first end wall of said working chamber, and a tangential outlet port exiting tangentially through said circular side wall of said working chamber, said vortex diode exhibiting, in said fluid in said working chamber, a radial pressure gradient which is of greater magnitude, when said flow of fluid is from said outlet port to said inlet port, than when said flow of fluid is from said inlet port to said outlet port, said vortex diode being further characterized by:

(a) said axial inlet port through said first end wall of said working chamber being positioned at a short distance from said second end wall of said working chamber;

(b) at least one end wall, of said first end wall and said second end wall, being a flexible diaphragm, permitting variation of said short distance; and

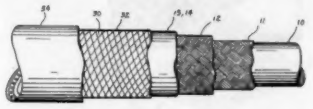
(c) said flexible diaphragm being responsive to said radial pressure gradient to diminish said short distance when said flow of fluid is from said outlet port to said inlet port.

4,259,989

CHAFE OR FIRE SLEEVE FOR HOSE

James M. Lalikos, Springfield; Chester T. Gazda, Chicopee, and Lawrence O'Melia, Easthampton, all of Mass., assignors to Titeflex Corporation, Springfield, Mass.

Continuation-in-part of Ser. No. 884,612, Mar. 8, 1978, Pat. No. 4,190,088. This application Jun. 6, 1979, Ser. No. 46,004
Int. Cl.³ F16L *11/10*
U.S. Cl. 138—109 **11 Claims**



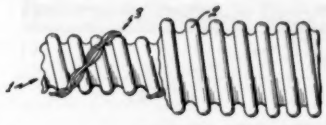
1. A chafe or fire sleeve for an aircraft fuel hose comprising an internal tube with an outer sleeve integrally formed thereon, said sleeve having a pair of coaxial layers, an outer of said coaxial layers being the chafe or fire sleeve made from a mixture of urethane and silicone elastomers, said urethane and slicone in said outer layer being mixed, with their proportions being in the range of 80% to 20% urethane and 20% to 80% silicone, respectively, an inner of said coaxial layers being silicone, and nonburning encapsulating material having interstices for exposing said outer layer to fire, whereby said outer material ablates, said encapsulating material covering and surrounding said outer layer to capture and hold any outer layer material flakes or particles which ablate in the fire.

4,259,990

SPACER IN CONCENTRIC TUBE SYSTEMS

Peter Rohner, Isernhagen, Fed. Rep. of Germany, assignor to Kabel-und Metallwerke, Gutehoffnungshütte A.G., Hanover, Fed. Rep. of Germany

Filed Jun. 20, 1979, Ser. No. 50,337
Int. Cl.³ F16L *9/18*; H01B *7/22*
U.S. Cl. 138—113 **12 Claims**



1. A thermally insulating spacer construction for a concentric tube system, the system being comprised of, or including, an inner tube and an outer tube, the spacer construction being a helical device on the inner tube, the device comprising a plurality of braided strand elements, forming a single, nontubular, coreless braid which is helically wound on the inner tube, as a whole.

4,259,991

HIGH PRESSURE HOSE CONSTRUCTION AND METHOD OF AND APPARATUS FOR MAKING THE SAME

Thomas A. Kutnyak, Greenwood, S.C., assignor to Automation Industries, Inc., Greenwich, Conn.

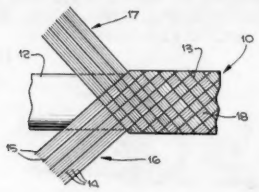
Continuation of Ser. No. 673,643, Apr. 5, 1976, abandoned. This application Sep. 20, 1979, Ser. No. 76,929
Int. Cl.³ F16L *11/04*
U.S. Cl. 138—127 **7 Claims**

1. A high pressure hose comprising:

(a) a unitary, smooth-walled liner of fluid-impermeable material having shape memory and high tensile strength;

(b) a flexible adhesive layer of a material compatible with said liner material and bonded to the outer wall of said liner; and

(c) a braided cover disposed about said outer wall of said liner and bonded thereto by said adhesive layer, said braided cover comprising a plurality of interwoven groups of strands each disposed at a bias angle from about



40° to 55° with respect to the longitudinal axis of said liner, each group of strands comprising a plurality of non-metallic fibers and a steel wire all in a side-by-side array, said steel wires each having a diameter from about 0.015 inch to about 0.025 inch.

4,259,992

FLEXIBLE PIPE SECTION

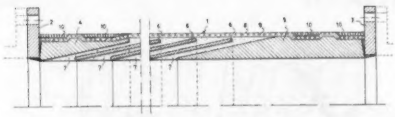
Hendrikus Kramer, Voorschoten, Netherlands, assignor to Vredestein N. V., Netherlands

Continuation-in-part of Ser. No. 879,918, Feb. 22, 1978, abandoned. This application Sep. 10, 1979, Ser. No. 74,366

Claims priority, application Netherlands, Feb. 23, 1977, 7701963

Int. Cl.[3] **F16L** *11/08*

U.S. Cl. 138—138 **1 Claim**



1. A flexible pipe section comprising

coupling means at each of the ends of the flexible pipe section,

a wall of the pipe section lying between said coupling means including

a row of abrasion-resisting annular members spaced from each other and extending substantially in between the inner and outer surfaces of the pipe section and inclined at a sharp angle with the longitudinal axis of the pipe section,

a layer of elastic material between and connecting inclined sides of adjacent annular members, said annular members having the shape of a shell of a truncated cone, having an axis substantially coinciding with the axis of the pipe section and having overlapping portions of adjacent annular members extending such that any plane transverse of said pipe section between said coupling means passes through at least two of said annular members,

a cover of elastic material on the pipe section including said wall,

at least one insert means in said cover to counteract an axial elongation of said cover,

end portions of said pipe section being secured to said coupling means.

4,259,993

CERAMIC-INSULATED PIPE FOR THE TRANSPORT OF HOT FLUIDS

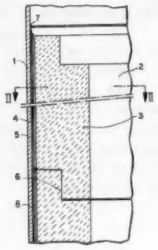
Franz Scholz, Jüchen, Fed. Rep. of Germany, assignor to Kernforschungsanlage Jülich Gesellschaft mit beschrankter Haftung, Jülich, Fed. Rep. of Germany

Continuation of Ser. No. 924,717, Jul. 14, 1978, abandoned. This application Nov. 19, 1979, Ser. No. 95,422

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1977, 2733611

Int. Cl.[3] **F16L** *9/22*

U.S. Cl. 138—149 **2 Claims**



1. A duct for the transport of high-temperature fluids, comprising:

a continuous metal outer pipe;

a tubular ceramic body received in said outer pipe but circumferentially spaced therefrom and defining a passage within said body for said fluid;

a plurality of annular metallic stressing elements extending circumferentially around and exerting inward prestress upon said ceramic body resisting the application of outward pressure by said fluid to said body, said elements being disposed inwardly of said pipe, said body and said elements together constituting a tubular member received within said pipe with all around clearance;

an intermediate cylindrical metal sleeve disposed between said pipe and said member over at least the full length of said member and axially extending over a plurality of said elements and surrounding said body;

first circumferential welds formed between opposite ends of said sleeve and said pipe, thereby securing said sleeve to said pipe and preventing parasitic fluid flow between said pipe and said sleeve; and

respective second circumferential welds between said elements and said sleeve, thereby mounting said member within said sleeve and thus mounting said member via said intermediate sleeve within said pipe while preventing parasitic fluid flow between said member and said sleeve.

4,259,994

PRODUCTION OF TERRY FABRICS FOR TOWELS

Victor Hobson, Park Mill, Halstead La., Barrowford, Nelson, County of Lancaster, England

Filed Jul. 16, 1979, Ser. No. 57,799

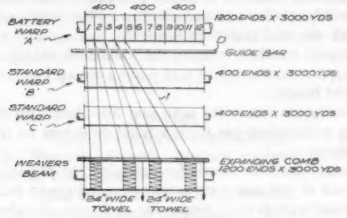
Claims priority, application United Kingdom, Sep. 16, 1978, 37113/78

Int. Cl.[3] **D03D** *39/00*

U.S. Cl. 139—1 R **6 Claims**

1. A method for the production of a patterned terry fabric comprising producing a design pattern, elongating the design pattern in length in proportion to a predetermined ratio of the length of the pile warp yarn relative to the length of the ground warp yarn, engraving the elongated design onto printing rollers or rotary screens and printing the elongated design onto the pile warp yarn, winding the printed pile warp yarn onto a warp beam, transferring the printed pile warp beam to

a terry loom, and in association with ground yarn weaving a terry fabric with the length of the pile warp yarn being supplied in the predetermined ratio to the length of the ground warp yarn to form the pile.

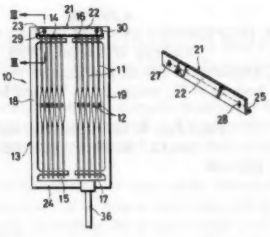


4,259,995

HARNESS FOR LOOMS

Hissai Nishiyama, Fuchu, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Jun. 28, 1979, Ser. No. 53,092
Claims priority, application Japan, Jul. 13, 1978, 53-96430
Int. Cl.[3] D03C 9/06
U.S. Cl. 139—92 **6 Claims**



1. A harness for looms comprising, in combination:

(a) a plurality of heddles;

(b) a rectangular heddle frame including at least one pair of horizontal bars projecting as a cantilever from one of opposed vertical sides of said rectangular frame for supporting thereon said heddles at opposite ends of each heddle; and

(c) an elongate rigid strip extending parallel to said horizontal bars and adjustably secured to said heddle frame for vertical adjustment toward and away from the adjacent ends of said heddles, and engageable therewith for acting therethrough to prevent the free ends of the heddle bars from vibrating.

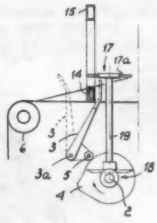
4,259,996

SHUTTLELESS LOOM

Francesco Mollica, Via Staurenghi, 31-Varese, Italy

Filed Jun. 29, 1979, Ser. No. 53,455
Int. Cl.[3] D03D 47/24
U.S. Cl. 139—437 **9 Claims**

1. An improved shuttleless loom comprising number of weft thread carriers, a weft thread carrier throwing device and a weft thread carrier recovering device, and means for substantially halting each of said weft thread carriers prior to the throwing thereof, wherein said throwing device comprises a rotary member and a fixed casing defining an open throwing track for said weft thread carriers, said throwing track having an inlet and an outlet end and said outlet end being open towards a loom shed, and wherein said means for substantially halting said weft thread carriers comprise an accumulator chamber located substantially adjacent to said inlet end for withholding each of said weft thread carriers supplied by said recovering device, a feeder located between said accumulator chamber and said inlet end of said open throwing track for inserting said weft thread carriers one by one from said chamber into said track, and means for actuating said feeder in synchronism with a sley of the loom such that each weft thread carrier is inserted into said open throwing track in advance with respect to the time of insertion of said weft thread carrier through the loom shed by an amount dependent on the time period requird to span said open throwing track.

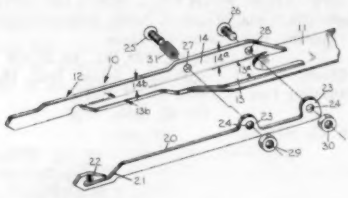


4,259,997

WEFT CARRIER

Anthony J. Tosches, Greensboro, N.C., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Nov. 7, 1979, Ser. No. 91,930
Int. Cl.[3] D03D 47/20
U.S. Cl. 139—448 **3 Claims**



1. An improved carrier for inserting weft yarn into the shed formed between warp yarns on a loom of the type in which the weft yarn is supplied from a source located outside of the warp and is inserted into the shed by carriers attached to reciprocating inserters, said improved carrier comprising:

(a) an elongated main body portion including:

(i) a flat horizontal web portion having a relatively wider dimension for uniting the inserter and a relatively narrower dimension which is located beyond the outer end of the inserter; and

(ii) a vertical web portion which extends upwardly from said horizontal web and has a relatively wider dimension on that end adjacent the relatively wider dimension of said horizontal web and has a relatively narrower dimension located beyond the outer end of the inserter;

(b) flexible gripper means having yarn directing and engaging means formed on one end thereof;

(c) means fixedly securing the end of said gripper means opposite the end with said yarn directing and engaging means to the relatively wider portion of said vertical web; and

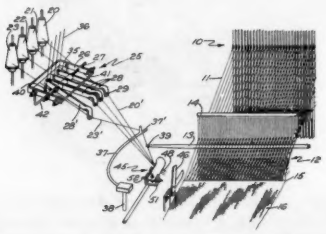
(d) means connecting said vertical web to said gripper means between the ends thereof to adjust the gripping pressure between said vertical web and said gripper means.

4,259,998

LOOM WITH STATIONARY WEFT SUPPLY

Manuel E. Moreira, 830 Langley St., Fall River, Mass. 02720

Filed Jun. 13, 1979, Ser. No. 48,244
Int. Cl.³ D03D *47/38*
U.S. Cl. 139—450 **6 Claims**



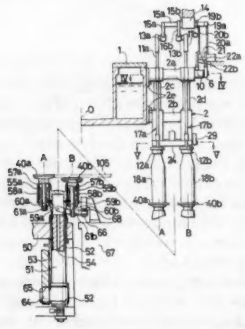
1. In a loom, a plurality of warps, means to provide a shed of the warps, a plurality of stationary weft supplies, weft insertion means to place a weft in the warp shed, a reed to beat up the weft to the fell of the fabric, a friction holding device comprising a pair of jaws adjacent the fell of the fabric to receive and hold a plurality of the wefts as beat up, means adjacent the holding device comprising a bracket having a thread receiving recess for positioning the weft threads relative to said pair of jaws, means between said device and fell to sever each weft as positioned in said device, means to select and position a weft from said plurality of wefts to be engaged by said weft insertion means in the warp shed.

4,259,999

GAS PRECHARGED, LIQUID FILLING MACHINE OPERATING WITH DUAL ROWS OF CONTAINERS

Yoshinobu Wada, Matsutoh, Japan, assignor to Shibuya Kogyo Company, Ltd., Kanazawa, Japan

Filed Jun. 22, 1979, Ser. No. 51,028
Claims priority, application Japan, Dec. 15, 1978, 53-174553[U]; Dec. 20, 1978, 53-176116[U]
Int. Cl.³ B67C *3/28*
U.S. Cl. 141—57 **10 Claims**



1. A machine for filling containers with a pressurized liquid, comprising:

a reservoir for containing a liquid and a gas under pressure;

a filling table supported for rotation about a vertical axis;

a plurality of pairs of radially aligned container support members mounted on said table and forming two circular rows concentric with said axis;

a filler mechanism spaced vertically above each of said pairs of container support members and supported for rotation therewith about said axis, each of said filler mechanisms having a pair of valved filler heads respectively disposed above the pair of container support members for sealing engagement with the tops of containers on said container support members, said filler mechanisms communicating with said reservoir whereby containers can be filled with the liquid when the valves of said filler heads are open;

means on said table for vertically raising said container support members to move the containers on said container support members into said sealing engagement with said filler heads;

snifter means associated with said filler heads for discharging pressurized gas from a filled container to the atmosphere;

container detector means for detecting the presence or absence of containers on said container support members;

filler valve operating means for each pair of valved filler heads, said filler valve operating means comprising first and second, coaxial, independently rotatable shafts, first connecting means operatively connecting said first shaft to the valve of one of said pair of valved filler heads and second connecting means operatively connecting said second shaft to the valve of the other of said pair of valved filler heads so that said valves can be independently opened and closed by independent rotation of said first and second shafts; and

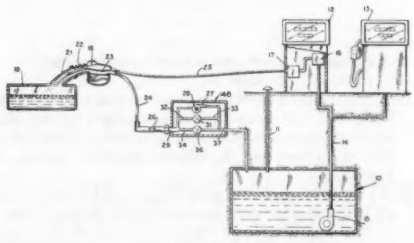
means operable in response to said container detector means to independently rotate said first and second shafts to open said valves only when containers are present on the container support members associated with the valves.

4,260,000

FUEL DISPENSING SYSTEM WITH CONTROLLED VAPOR WITHDRAWAL

Dean C. McGahey, Fishkill, and Eugene W. Vest, Wappingers Falls, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 4, 1979, Ser. No. 45,702
Int. Cl.³ B65B *3/18, 31/06*
U.S. Cl. 141—59 **7 Claims**



1. A dispensing system for a vaporizable liquid which is held in a storage tank **10**, a dispenser including a pump **15** having its suction communicated with the storage tank **10** to receive a flow of liquid from the latter, and the pump **15** having a discharge communicated with a liquid flow regulator **17**;

a vacuum source **48** including an inductor **27** means inlet **28** and outlet ports, and being operable to circulate a vaporous stream of said vaporizable liquid and to establish a vacuum condition at the inlet port **28** thereof, and having the inductor outlet port communicated with said storage tank **10**,

a nozzle **18** adapted to removably engage a tank **19** positioned to receive a flow of the liquid, said nozzle **18** including a vapor passage **23** to receive vapors which are displaceable from said tank **19** by incoming vaporizable liquid,

first conduit means **25** communicating said nozzle **18** with said flow regulator **17** to receive a controlled fuel flow from the latter,

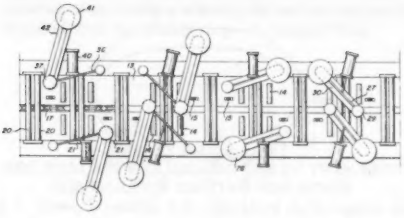
second conduit means **24** communicating said nozzle vapor passage **23** with said vacuum source inductor inlet **28** whereby to establish a reduced pressure in the said second conduit means **24** while vapor is flowing therethrough, and a constricted section **26** in said second conduit means **24** positioned to throttle the flow of vapor flowing through the latter.

4,260,001

WOODWORKING MACHINES

Gabriël De Muynck, Ardooie, Belgium, assignor to Bekaert Engineering, Zwevegem, Belgium

Filed Oct. 3, 1978, Ser. No. 948,621
Claims priority, application Belgium, Oct. 3, 1977, 8414
Int. Cl.³ B27G *5/06*
U.S. Cl. 144—144 A **21 Claims**



1. An apparatus for shaping and finishing at least a part of each of the peripheries of planar workpieces of wood or similar material, comprising:

carrier blocks each having a template positioned thereon, each said template being adapted to have a planar workpiece carried on the top thereof unattached to said template;

an apparatus bed for passage of said carrier blocks through said apparatus, said bed having an input end and an output end and means extending from said input end to said output end for conveying said carrier blocks along said bed from said input end to said output end with a uniform rectilinear movement, said conveying means being positioned centrally on said bed and each said carrier block including means for engaging said conveying means; at least one pivotally mounted shaping means positioned on each side of said bed for tracing each said template and shaping at least a part of the periphery of each workpiece in accordance with the pattern of its template, each said shaping means pivoting from a fixed position with respect to said bed and including means for pivoting said shaping means so as to engage a workpiece as the workpiece passes along said bed;

at least one pivotally mounted sanding means positioned on each side of said bed for sanding and thereby finishing at least a part of the periphery of each workpiece, each said sanding means pivoting from a fixed position with respect to said bed and including means for pivoting said sanding means so as to engage a workpiece as the workpiece passes along said bed;

a plurality of pressing means overlying said bed and fixed in longitudinal position with respect to said bed for successively contacting each workpiece from above as the workpiece passes along said bed to hold the workpiece by friction alone against its template in a fixed position with respect to said template; and,

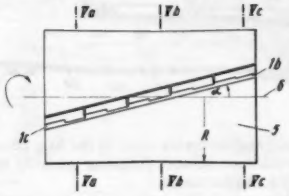
sensing means in said bed for automatically activating each of said shaping means, said sanding means, and said plurality of pressing means in response to the passage of each said carrier block along said bed.

4,260,002

ROTATABLE CUTTER SPINDLE

Karl H. Schmalz, Ruedesheim; Arnold Schmidt, Gutenberg, and Karl H. Ulrich, Stromberg, all of Fed. Rep. of Germany, assignors to Hombak Maschinenfabrik K.G., Bad Kreuznach, Fed. Rep. of Germany

Filed May 15, 1978, Ser. No. 905,867
Claims priority, application Fed. Rep. of Germany, May 14, 1977, 2721930; May 14, 1977, 2721971
Int. Cl.³ B27G *13/00*
U.S. Cl. 144—230 **14 Claims**



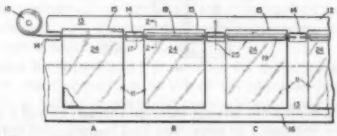
1. A rotatable cutter spindle for cutting chips of a predetermined length, comprising: a support body having an axis of rotation and a circumferential surface; and a plurality of like, elongated cutters mounted on said body and spaced apart relative to one another, the cutters being inclined relative to said axis, each cutter having a leading end and a trailing end and defining cutting angles which differ from one to another of said ends, and each cutter further having alternately arranged outer cutting edges extending radially outwardly from said surface and alternately arranged inner cutting edges extending radially inwardly from said surface, said inner cutting edges bounding grooves located intermediate said outer and inner cutting edges, each of said grooves having a varying depth, which varying depth increases from said leading end towards said trailing end of each cutter, said outer cutting edges lying in an imaginary first cylindrical surface and said inner cutting edges lying in an imaginary second cylindrical surface to thereby obtain an identical cutting depth.

4,260,003

PLASTIC BAGS HAVING DRAWSTRINGS

Thomas C. Hendrickson, c/o Colgate-Palmolive Company, 300 Park Ave., New York, N.Y. 10022

Division of Ser. No. 827,673, Aug. 25, 1977, abandoned. This application Sep. 7, 1979, Ser. No. 73,287
Int. Cl.³ B65D *33/28*
U.S. Cl. 150—11 **5 Claims**



1. A bag assembly comprising a limp flat bag of flexible synthetic plastic material having an open mouth and means mounting a drawstring at said mouth comprising a separate tape extending across the width of the bag in flat condition adjacent said mouth, said tape being fixed to one side of said bag except for an intermediate longitudinal area extending from end to end thereof and having a length substantially equal to the width of the bag in flat condition, and a flexible drawstring extending loosely and freely through the entire space between the tape and bag surface at said area and projecting at opposite ends from said tape and beyond the side edges of the flat bag.

4,260,004

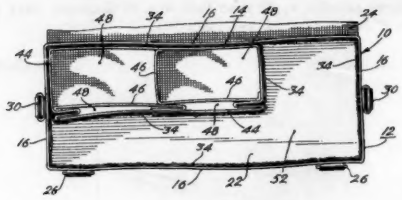
CAMERA AND ACCESSORY CASE

James G. Domke, 4310 Pine St., Philadelphia, Pa. 19143

Filed Oct. 27, 1978, Ser. No. 955,668

Int. Cl.³ A45C *11/38*; B65D *30/22*

U.S. Cl. 150—30 **6 Claims**



1. A camera and accessory case, or the like, comprising:

an outer enclosure member including inwardly facing walls defining a compartment;

a removable, collapsible, inner compartmentalized member having walls and a bottom, the bottom being collapsible longitudinally, laterally and diagonally; and,

attachment means mounted on said inwardly facing walls and said inner collapsible member providing selective securement of said collapsible member at a plurality of locations within said enclosure member, thereby providing a combination of compartments within said collapsible member and between the walls of said collapsible member and the walls of said outer enclosure member.

4,260,005

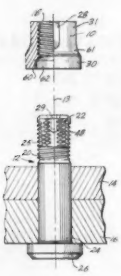
SELF-LOCKING FASTENER, FASTENER SYSTEM, AND PROCESS

Edgar L. Stencel, Huntington Beach, Calif., assignor to VSI Corporation, Pasadena, Calif.

Filed Nov. 9, 1977, Ser. No. 849,756

Int. Cl.³ F16B *39/02, 39/28*

U.S. Cl. 411—3 **34 Claims**



1. For use with a pin having external threads to make a joint with at least one sheet, an improved load limiting and self-locking collar comprising:

(a) the collar having an axial bore;

(b) internal threads in the axial bore for threaded receipt on the external threads of the pin;

(c) at least one lobe on the outside of the collar for engagement by a driver and failure in radial compression upon the application of a predetermined load thereon by the driver in conjunction with the sheet, the lobe having an external surface for engagement by the driver that parallels the axis of the bore; and

(d) the collar radially inward of the lobe and the lobe being plastically deformable such that upon sufficient engagement by the driver in a rotational direction tending to tighten the collar on the pin and against the sheet to produce in conjunction with the sheet the predetermined load the lobe deforms radially inward and displaces material of the body ahead of the deforming lobe into the axial bore and into a relationship with the pin that rotationally locks the collar and pin together.

4,260,006

TIRE AND WHEEL RIM ASSEMBLIES

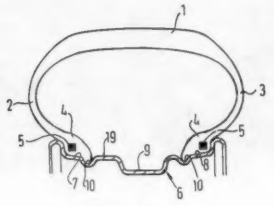
William S. Udall, Sutton Coldfield, and Wilfred H. Harrington, Solihull, both of England, assignors to Dunlop Limited, London, England

Filed Jul. 10, 1979, Ser. No. 56,267

Claims priority, application United Kingdom, Jul. 29, 1978, 31656/78

Int. Cl.³ B60C *7/24, 15/00*

U.S. Cl. 152—362 R **19 Claims**



1. A tire comprising a tread portion, sidewalls and a pair of bead regions each containing a substantially inextensible annular reinforcement wherein at least one of the bead regions is provided with an axially and radially projecting extended toe portion, the extended toe comprising elastomeric material being flexible in a direction perpendicular to its length and substantially rigid in the direction of its length, the bead region further including abutment means comprising a hump of elastomeric compound formed on the axially inward face of said bead region such that when fitted to a wheel rim having a complementary groove formed therein to accommodate said extended toe portion and lateral road induced force is applied to the tire tread the hump contacts the rim after initial rotation of the bead region to generate additional bead retaining forces to those generated by the toe in the groove.

4,260,007

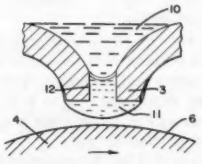
METHOD AND APPARATUS FOR CASTING AMORPHOUS FILAMENT USING A CRUCIBLE WITH A BORIC OXIDE SEAL

John A. Wellslager, Mt. Arlington, and Susan L. Rosenberg, Landing, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Mar. 14, 1979, Ser. No. 20,304

Int. Cl.³ B22D *11/10, 39/00, 41/08*

U.S. Cl. 164—64 **10 Claims**



1. In a method for the casting of metal filaments, wherein molten metal is extruded from a crucible through an extrusion

orifice onto a moving quench surface, the improvement comprising:

(a) providing a crucible utilizing an orifice that is composed of a material wettable by molten boric oxide;

(b) sealing said orifice with boric oxide to prevent reaction of a molten charge held in said crucible with the ambient atmosphere;

(c) charging the crucible with the metal to be extruded, said metal being substantially nonreactive with molten boric oxide;

(d) producing a vacuum in the crucible sufficient to prevent the metal from flowing through the orifice when the metal is molten;

(e) heating the metal to the molten state and to a temperature at least higher than the softening point of boric oxide such that the boric oxide is molten; and

(f) increasing the pressure in the crucible sufficiently to extrude the molten metal through the orifice onto the moving quench surface whereby the molten boric oxide is expelled with the leading surge of extruded flow.

4,260,008

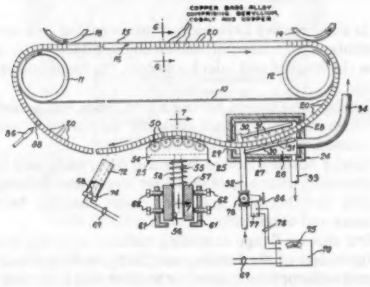
SIDE DAM APPARATUS FOR USE IN TWIN-BELT CONTINUOUS CASTING MACHINES

Paul J. Kranz, Westfield, N.J., and Lloyd A. Scroggins, Amarillo, Tex., assignors to Asarco Incorporated, New York, N.Y.

Filed May 30, 1979, Ser. No. 43,920

Int. Cl.³ B22D *11/06*

U.S. Cl. 164—431 **19 Claims**



1. Side dam apparatus adapted for use in a twin-belt continuous casting machine wherein two spaced-apart side dams each revolve in a loop and travel along a casting zone from its input end to its output end between a pair of revolving spaced-apart casting belts thereby defining a moving mold, the side dams returning from the output end to the input end of the casting zone along a return path located away from the casting zone, the side dams each comprising a multiplicity of dam blocks secured to a flexible continuous securing means, the dam blocks each being formed of a copper base alloy comprising beryllium, cobalt and copper, the alloy characterized by being a wrought alloy having a hardness in excess of 90 Rockwell B and a conductivity in excess of 35% IACS, the blocks being resistant to intergranular cracking and chipping over a prolonged period of exposure to thermal cycling at temperatures ranging from about 300° F. to about 800° F., said alloy comprising by weight, beryllium in amount in excess of a trace but not more than 0.7% of the alloy, and the cobalt in amount greater than the beryllium but not more than 2.7% of the alloy, the total of cobalt plus beryllium plus copper being 99.5% minimum.

4,260,009

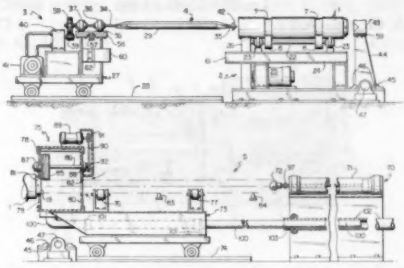
APPARATUS FOR CENTRIFUGAL CASTING

Charles H. Noble, P.O. Box 58094, Birmingham, Ala. 35209

Continuation of Ser. No. 887,213, Mar. 16, 1978, abandoned, which is a division of Ser. No. 778,705, Mar. 17, 1977, Pat. No. 4,124,056. This application Oct. 30, 1979, Ser. No. 89,306

Int. Cl.³ B22D *13/02, 13/10, 29/04;* **B22C** *13/10*

U.S. Cl. 164—270 **9 Claims**



1. In an apparatus for producing tubular metal articles by centrifugal casting, the combination of

mold supporting and rotating means for supporting and rotating a mold about a horizontal axis;

a generally tubular open ended centrifugal casting mold mounted

on said mold supporting and rotating means and having an active mold surface which is of circular cross section transverse to the horizontal axis of mold rotation;

means associated with said mold for establishing on the active surface of said mold, while the mold is supported and rotated by the supporting and rotating means, a lining consisting essentially of finely particulate binderless refractory material, the lining having a profile identical to that desired for the article to be cast;

puller means associated with an end of said mold supporting and rotating means and movable between an inactive position, spaced from the supporting and rotating means, and an active position in which the puller means is moved into said mold to engage a cast article in the mold,

the puller means being driven by power means for moving said puller means to its active position to engage the cast article and thereafter moving said puller means to its inactive position to withdraw the cast article; and

recovery means for recovering the binderless refractory material as the cast article is pulled from said mold by the puller means, the recovery means comprising

means defining a chamber having spaced end walls each provided with an opening, said openings being coaxially aligned and dimensioned to accommodate an article cast in said mold,

means for supporting the chamber for movement between an inactive position, in which the chamber is displaced from the supporting and rotating means, and an active position, in which the chamber is disposed between the supporting and rotating means and the puller means and one of the chamber openings is registered with an adjacent end of said mold and both of the chamber openings are coaxial with the mold, said puller means being movable through said chamber via said openings to pull the cast article through the chamber when the chamber is in its active position,

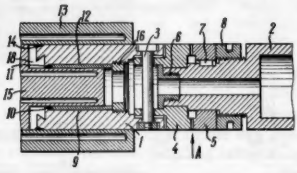
means within said chamber for dislodging particulate material from the cast article as the cast article is moved through the chamber by the puller means, and

means associated with said chamber for withdrawing from the chamber the refractory material received by the chamber when the cast article is pulled therethrough by the puller means.

4,260,010
DUMMY BAR FOR USE IN MACHINES FOR CONTINUOUS CASTING OF ROUND HOLLOW INGOTS

Alexandr D. Berenov, ulitsa Krasnykh bortsov, 7-a, kv. 18; Vladislav P. Krainev, ulitsa Lunacharskogo, 210-a, kv. 24; Midkhat M. Mansurov, ulitsa Izbiratelei, 7, kv. 23, and Evgeny L. Silin, ulitsa Kultury, 22, kv. 9, all of Sverdlovsk, U.S.S.R.

Filed Sep. 4, 1979, Ser. No. 72,419
Int. Cl.[3] B22D *11/08*
U.S. Cl. 164—445 1 Claim

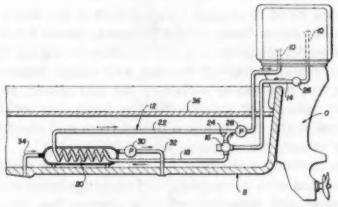


1. A dummy bar for machines for continuous casting of round hollow ingots, comprising: a head with a central orifice for receiving a mandrel; a bar coupled with said head by a connecting assembly; said central orifice of the head having a cylindrical section changing to a conical section with the apex of the cone presented to the end face of said head contacting molten metal; a wedging bushing with a nut, placed inside said cylindrical section of the central orifice of said head; said connecting assembly being provided with a cam sleeve, each half thereof having one degree of freedom, one in the axial, and the other in the tangential directions.

4,260,011
THERMOSTATICALLY CONTROLLED LIQUID COOLING APPARATUS FOR OUTBOARD MOTORS

George Brown, 317 S. Harbor Dr., Venice, Fla. 33595

Filed Jan. 11, 1979, Ser. No. 2,760
Int. Cl.[3] G05D *23/00*
U.S. Cl. 165—35 4 Claims



1. Liquid cooling apparatus for an outboard motor, comprising:

a temperature responsive mixing valve having an inlet and two outlets,

a first line connecting the motor to the inlet of said mixing valve,

temperature responsive means positioned in said first line,

a heat exchanger having an inlet and an outlet,

a second line connecting one outlet of said mixing valve to the inlet of said heat exchanger,

a third line connecting the outlet of said heat exchanger to the motor,

a first pump positioned in said third line, said temperature responsive means being operatively connected to said first pump to activate it for the circulation of cooling liquid when the temperature of the cooling liquid in said first line exceeds a predetermined temperature,

means for connecting said heat exchanger to ambient water for cooling the cooling liquid passing through said heat exchanger from said second line to said third line,

a second pump positioned in said connecting means for circulating ambient water through said heat exchanger, said second pump being operatively connected to said temperature responsive means, and

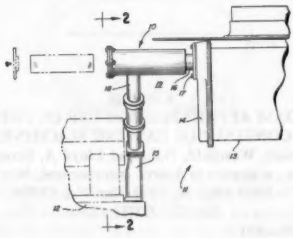
a fourth line connecting the other outlet of said mixing valve to said third line,

whereby said mixing valve directs cooling liquid in said first line to said second line or said fourth line or to said second and fourth lines in response to the temperature of the cooling liquid in said first line.

4,260,012
LOCOMOTIVE ENGINE COOLANT FILTER

Humberto Suarez, c/o Diesel Radiator Co., 1985 Janice Ave., Melrose Park, Ill. 60160

Filed Jan. 14, 1980, Ser. No. 111,655
Int. Cl.[3] B01D *35/02*
U.S. Cl. 165—51 12 Claims



9. In a locomotive having a radiator provided with a projecting tubular inlet connector, and an engine adjacent the radiator below the level of said inlet connector, the improvement comprising:

a tubular filter screen having a first, inner end defined by a transverse wall spaced coaxially outwardly of said inlet connector, and an opposite, outer end;

a tubular housing having inner and outer ends, said housing extending coaxially of said filter screen and defining coaxially therebetween a tubular outlet chamber having an inner and outer end;

a first closure flange extending radially inwardly from said inner end of the housing and being sealingly secured to said radiator inlet connector to close said inner end of said outlet chamber and mount said housing to said radiator inlet connector;

a second closure flange on said outer end of the housing;

a closure member removably sealingly secured to said second closure flange to extend across the outer end of the housing to close said outer end of said outlet chamber and the outer end of said tubular filter screen;

flow passage means for conducting engine coolant liquid from said engine into the interior of said tubular filter screen for flow through said filter screen and outlet chamber into said radiator inlet connector; and

means for removably sealingly securing said closure member to said flow passsage means.

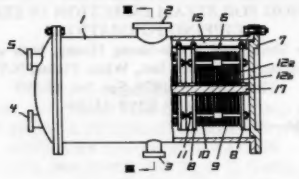
4,260,013
PLATE TYPE HEAT EXCHANGER

Hiroyuki Sumitomo, Osaka, Japan, assignor to Hisaka Works, Limited, Osaka, Japan

Filed Aug. 10, 1979, Ser. No. 65,469
Int. Cl.[3] F28F *3/08*
U.S. Cl. 165—75 4 Claims

1. A plate heat exchanger comprising; a cylindrical container having an inlet and an outlet for feeding and discharging

one of both media respectively and an inlet and an outlet for the other, and being arranged axially horizontally to open at one end; a plurality of heat exchange units each including a pair of opposite frames and a pack of plate elements clamped



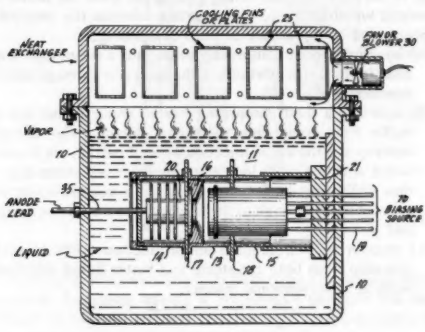
face to face therebetween and being inserted in sequence into said container; and a press lid mounted to the open end of said container under condition of thrusting said plurality of heat exchange units.

4,260,014

EBULLIENT COOLED POWER DEVICES

John D. Feehan, Bethlehem, Pa., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 9, 1979, Ser. No. 28,415
Int. Cl.³ H01C *23/42*
U.S. Cl. 165—105 **1 Claim**



1. An ebuillient cooled power apparatus, comprising:

a relatively vertical housing having an internal hollow for accommodating a fluorocarbon liquid which when exposed to a predetermined amount of heat will vaporize;

a heat exchanger including a plurality of metal fins positioned within said housing at a top end and located above the level of said liquid and adapted to condense vapors impinging thereon back to a liquid, said housing having an aperture in a sidewall adjacent said heat exchanger, a fan coupled to said housing about said aperture to direct air into said heat exchanger for cooling the same, a thyratron electron tube positioned horizontally in said housing and totally immersed within said fluid, said thyratron having a plate, cathode and grid electrode, with said plate electrode coupled to a horizontal supporting rod extending through a sidewall of said housing, a socket member located internally on a sidewall of said housing opposite said sidewall containing said rod, with said grid and cathode electrodes of said thyratron inserted into said socket member to provide said horizontal support for said thyratron;

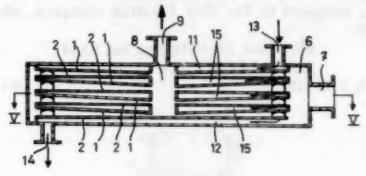
means coupled to said thyratron for applying operating potential thereto, to cause said device to vaporize said liquid to thereby cool said thyratron by the latent heat of vaporization of said liquid, said heat exchanger operative with said fan for condensing said vapor back to a liquid for returning the same to said housing, whereby during all operating conditions said thyratron will be totally immersed in said fluid and cooled thereby.

4,260,015

SURFACE CONDENSER

Primo Tamburini, Lisse, Netherlands, assignor to Organisation Europeenne de Recherches Spatiales, Paris, France

Filed Sep. 18, 1979, Ser. No. 76,747
Claims priority, application Belgium, Oct. 5, 1978, 190929
Int. Cl.³ F28B *9/08, 9/02*
U.S. Cl. 165—110 **4 Claims**



1. Condenser apparatus comprising:

at least one pair of coextensive elements spaced apart from each other to form a relatively narrow gap therebetween, said gap having a width which is tapered from the outer ends of said elements towards a defined portion thereof;

peripheral distributor means extending along the outer ends of said elements and having its interior space in communication with the said gap at the larger width side thereof, said distributor means having an inlet for the vapor to be condensed; and

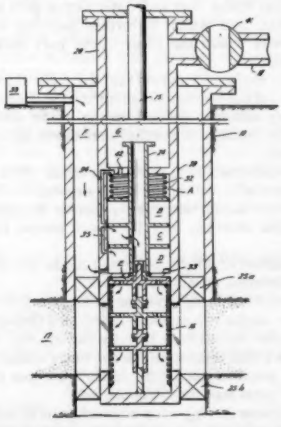
collector means for collecting the condensed liquid at said defined portion of the elements, said collector means being in communication with the interior space of the gap at the smaller width side thereof.

4,260,016

SELF-CLEANING HELICAL SPRING SAND SCREEN

Reynaldo Calderon, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 12,934, Feb. 16, 1979. This application Feb. 28, 1980, Ser. No. 125,417
Int. Cl.³ B01D *25/34;* **E03B** *3/18;* **E21B** *37/08, 43/08*
U.S. Cl. 166—74 **10 Claims**



1. A self-cleaning helical spring sand screen comprising,

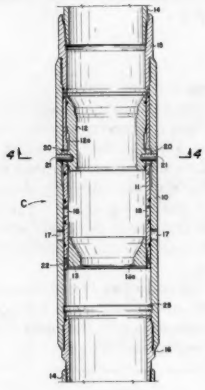
(a) helical spring sand screen means for being positioned in a well in an unconsolidated sand strata for producing sand-free liquid from a production tube,
(b) spring valve means for said helical spring sand screen,
(c) high pressure liquid source means for said spring valve means, and
(d) said spring valve means being responsive to said high pressure liquid source means for expanding said helical spring sand screen means for cleaning thereof.

4,260,017

CEMENTING COLLAR AND METHOD OF OPERATION

Wayne F. Nelson, and Paul A. Weiss, both of Wichita Falls, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 13, 1979, Ser. No. 93,647
Int. Cl.³ E21B *33/14, 33/16, 34/14*
U.S. Cl. 166—154 **8 Claims**



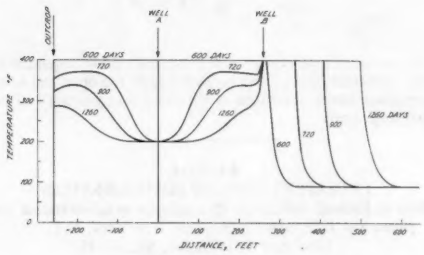
1. A collar assembly for cementing a well casing in a borehole, the assembly comprising:
a collar member which connects into the well casing, and has at least one port in the collar wall;
an outer sleeve which is slidably positioned inside the collar, which has at least one port in the sleeve wall, which is movable within the collar member to a first position in which the collar port and outer sleeve port are in direct alignment, and which is further movable to a second position in which the outer sleeve port moves past the collar port;
a set of lug members inserted into the outer sleeve, each lug having a shoulder thereon adapted to seat against a corresponding shoulder defined on the inside wall surface of the collar member, when the outer sleeve moves to its first position;
an inner sleeve which is positioned inside the outer sleeve, and is movable within the outer sleeve;
a shear means which temporarily secures the outer sleeve to the collar member, and the inner sleeve to the outer sleeve;
a seat member which is positioned inside the outer sleeve, and is fastened to said outer sleeve;
the seat member being adapted to engage a weighted trip member, as the trip member is dropped through the inner sleeve, the trip member thereby causing the shear means to shear a first time, to allow the outer sleeve to move to its first position, such that cement can pass through the aligned ports into the borehole; and
the inner sleeve having a top edge adapted to engage a plug member, as the plug member is dropped through the well casing, such that fluid pressure applied behind the plug member causes the shear means to shear a second time, to allow the outer sleeve to move further to its second position.

4,260,018

METHOD FOR STEAM INJECTION IN STEEPLY DIPPING FORMATIONS

Yick-Mow Shum, and Wann-Sheng Huang, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 19, 1979, Ser. No. 85,085
Int. Cl.³ E21B *43/24*
U.S. Cl. 166—272 **6 Claims**



1. A method for recovering petroleum from an inclined reservoir which outcrops at the surface wherein the reservoir is penetrated by a plurality of wells comprising:
(a) injecting a fluid comprising steam into a steam injection zone in the upper portions of the reservoir through steam injection wells;
(b) injecting a fluid comprising heated water liquid into a buffer zone comprising the region between the surface outcrop and the steam injection zone of part (a) via heated water injection wells located updip from said steam injection wells, said buffer zone being of a size sufficient to prevent breakthrough of the injected steam at the outcrop; and,
(c) recovering petroleum from production wells located downdip from both the steam and water liquid injection wells in a conventional manner.

4,260,019

METHOD OF RECOVERING PETROLEUM FROM A SUBTERRANEAN RESERVOIR INCORPORATING RESINOUS POLYALKYLENE OXIDE ADDUCTS

Charles M. Blair, Jr., Buena Park, Calif., assignor to Magna Corporation, Santa Fe Springs, Calif.

Continuation-in-part of Ser. No. 917,057, Jun. 19, 1978, abandoned. This application Jun. 4, 1979, Ser. No. 45,478
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—274 **39 Claims**

1. The method of recovering petroleum from a subterranean reservoir comprising the steps of: (1) introducing into said reservoir a predeterminable amount of a polyalkylene oxide adduct of a fusible, water-insoluble organic aromatic hydrocarbon solvent-soluble synthetic resin, wherein said resin has from between about 4 to about 15 phenolic groups and is an alkyl or cycloaliphatic substituted phenol-aldehyde condensate of an ortho- or para-substituted phenol and an aldehyde, said condensate resin being thereafter further condensed with an alkylene oxide containing less than about five carbon atoms in an amount equal to at least one mole of alkylene oxide per phenolic moiety of said resin, said condensation product at about 25° C.: (a) being less than about 1% by volume soluble in water and in isooctane; (b) having a solubility parameter in the range of between about 6.9 and about 8.5; and (c) spreading at the interface betweem distilled water and refined mineral oil to

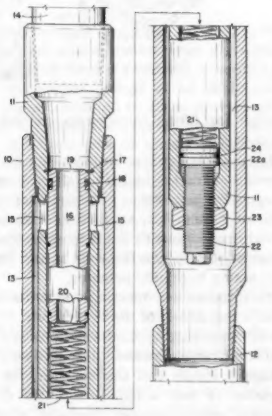
form a file having a thickness no greater than about 20 Angstroms at a film pressure of about 16 dynes per cm, the weight ratio of oxide to condensation product in a solvent-free state being between about 1-to-10 and about 10-to-1; and (2) contacting said petroleum in said reservoir with an effective thin film forming amount of said polyalkylene oxide adduct.

4,260,020

METHOD AND TOOL FOR CONTROLLING FLUID FLOW FROM A TUBING STRING INTO A LOW PRESSURE EARTH FORMATION

Wayne F. Nelson, Waxahachie, and Derrel G. Gurley, Houston, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 4, 1979, Ser. No. 71,978
Int. Cl.³ E21B *37/08, 43/25, 43/26*
U.S. Cl. 166—305 R **8 Claims**



8. Method for controlling fluid flow from a tubing string into an earth formation having a bottomhole pressure less than normal hydrostatic pressure of a treating fluid contained in the tubing string, the method comprising the steps of:

attaching a tool onto a tubing string, the tool including a tubular piston slidably enclosed in a housing with a fluid outlet port therein, the piston having a top face with a larger surface area than the bottom face of the piston, and the tool including means for adjusting the position of the piston within the housing;

lowering the tool on the tubing string to a point above a zone in the formation to be treated with the fluid;

filling an upper section of the tubing string with the treating fluid, such that the fluid is in contact with the piston and the housing;

applying sufficient upward force against the piston, with the adjusting means, to exceed the hydrostatic pressure force of the treating fluid against the piston;

moving the piston with the upward force to a position which closes off the fluid outlet port, and contains the treating fluid within the piston and the housing;

applying enough fluid pressure against the top face of the piston to overcome the upward force of the adjusting means and thereby move the piston downwardly below the fluid outlet port; and

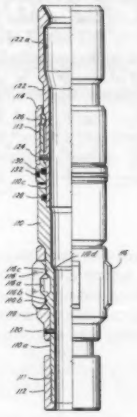
allowing the treating fluid to pass through the fluid outlet port and into a lower section of the tubing string adjacent to the formation to be treated.

4,260,021

PLUG CATCHER TOOL

James D. Mott, Houston, Tex., assignor to Hydril Company, Los Angeles, Calif.

Filed Jan. 9, 1979, Ser. No. 2,197
Int. Cl.³ E21B *23/00*
U.S. Cl. 166—318 **1 Claim**



1. A plug catcher tool adapted for releasably securing within a tubing hanger to seat a plug for hydraulically setting the subsurface tubing hanger, including:

a tubular body receivable within a tubular stinger and forming a reduced passage for enabling flow through the stinger until it is desirable to actuate the tubing hanger;

a securing ring disposed outwardly of said tubular body and secured thereto by a shear pin, and securing ring having a plurality of windows formed therethrough;

a corresponding plurality of latch dogs, with each of said latch dogs received in one of said windows and extending radially outwardly from said securing ring within an annular groove formed on the tubular stinger for releasably securing the plug catcher within the stinger;

said tubular body forming an upwardly facing annular shoulder for receiving thereon and sealing with a plug means that is movable into the stinger when desired;

means carried exteriorly of said tubular body for sealing with the tubular stinger to control the directional application of increased fluid pressure from above the stinger into the subsurface tubing hanger to effect its setting in response to the increased fluid pressure above a plug means received within the tubular body of the plug catcher; and

means for connecting with a retrieving tool to enable shearing of the shear pin holding the securing ring to said tubular body to enable the said latch dogs to move radially inwardly from the annular groove of the tubular stinger and thereby release the plug catcher tool for retrieval from the stinger.

4,260,022

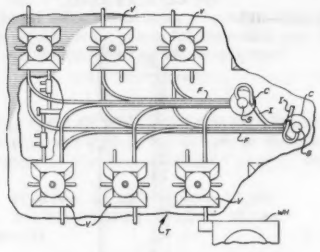
THROUGH THE FLOW-LINE SELECTOR APPARATUS AND METHOD

Bernard H. Van Bilderbeek, Aberdeen, Scotland, assignor to Vetco, Inc., Ventura, Calif.

Filed Sep. 22, 1978, Ser. No. 944,714
The portion of the term of this patent subsequent to Jan. 9, 1996, has been disclaimed.
Int. Cl.³ E21B *34/04*
U.S. Cl. 166—339 **29 Claims**

1. Through the flowline apparatus for wells completed on the floor of a body of water comprising: a template having

wellhead means thereon; through the flowline selector means on said template; a plurality of flowlines extending between said selector means and said wellhead means; an inlet conduit connected to said template; said selector means having an



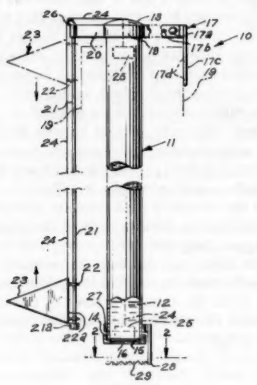
access loop connected with said inlet conduit and remotely operable means for selectively establishing communication between said access loop and one of said flowlines; and means releasably connecting said selector means and said access loop to said template including remotely operable connector means.

4,260,023

AUTOMATIC FIRE EXTINGUISHER FOR CHIMNEYS HAVING A FLOAT OPERATED FLAG

Edward Irmscher, Star Rte., Hortonville, N.Y. 12745

Filed Oct. 12, 1979, Ser. No. 84,098
Int. Cl.³ A62C *37/12*
U.S. Cl. 169—57 **5 Claims**



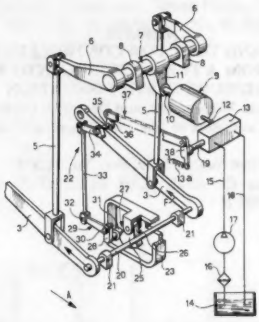
1. An automatic fire extinguisher for chimneys, comprising, in combination, a container, depending within a chimney, a fire extinguishing solution received in said container, an adjustable bracket secured to said container for mounting it to a chimney, a float received in said container with an attached cable for elevating a flag to indicate when a fire has occurred in the chimney, and when the fire extinguishing solution has been discharged, and a screw-cap with a fire meltable disc, is secured to said container for retaining the fire extinguishing solution in said container.

4,260,024

DEVICE FOR LIFTING IMPLEMENTS CARRIED ON AGRICULTURAL TRACTORS

Giancarlo Benassi, Modena, Italy, assignor to Fiat Trattori S.p.A., Modena, Italy

Filed Jun. 1, 1979, Ser. No. 44,832
Claims priority, application Italy, Jul. 28, 1978, 68808 A/78
Int. Cl.³ A01B *63/112*
U.S. Cl. 172—12 **3 Claims**



1. Device for lifting implements carried on agricultural tractors, comprising:

articulated linkage means for attaching an implement to an agricultural tractor including at least one pair of lower linkage arms movable in a longitudinal vertical plane and a pair of substantially vertical tie-rods having respective pivotal connections to the respective lower linkage arms at points intermediate the ends of said linkage arms,

a single-acting hydraulic actuator,

a lever transmission connecting said actuator to said tie-rods for effecting lifting of the implement;

means for supplying hydraulic fluid to said actuator;

hydraulic distributor means, interposed between the hydraulic supply means and the actuator, for controlling the operation of said actuator, the said distributor means having a control member, movable between a rest position, in which the actuator is not supplied with pressure fluid and the implement is lowered, and a working position in which the actuator is supplied with pressure fluid to lift the implement;

a flexible transverse bar connected at its ends to the said lower linkage arms and supported on the tractor for rotation about its axis so that in use of the device the reaction force transmitted from the ground to the implement, when the latter is lowered into the ground, causes deformation of said flexible bar in a substantially horizontal plane, and

a mechanical transmission interposed between the flexible bar and the control member of the hydraulic distributor means, and adapted to cause movement of said control member towards its working position, to effect lifting of the implement, when the said reaction force and the consequent deformation of the flexible bar in said horizontal plane exceeds a predetermined value;

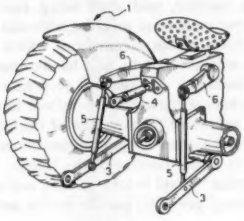
wherein the improvement consists in that the said pivotal connections of said tie-rods to the respective lower linkage arms are such that the weight of the implement, when it is lifted from the ground exerts a moment on the lower linkage arms around said pivotal connections, causing a deformation of the said flexible bar downwardly in a substantially vertical plane, and the said mechanical transmission having means engaging said flexible bar so that downward deformation of the flexible bar in said vertical plane will cause said mechanical transmission to return said control member to its rest position.

4,260,025

DEVICE FOR AUTOMATICALLY LIFTING AND RAPIDLY LOWERING TRACTOR IMPLEMENTS

Angelo Gregorio, Modena, Italy, assignor to Fiat Trattori S.p.A., Modena, Italy

Filed Jun. 7, 1979, Ser. No. 46,277
Claims priority, application Italy, Jul. 28, 1978, 68809 A/78
Int. Cl.[3] A01B *63/112*
U.S. Cl. 172—12 2 Claims



1. Device for automatically lifting and relowering an implement carried by an agricultural tractor when a predetermined value of ground reaction force is exceeded, comprising:

means for the articulated linkage of an implement to an agricultural tractor, adapted to allow movements of the implement in a longitudinal vertical plane, said means including at least one pair of lower linkage arms, and respective substantially vertical tie-rods pivotally connected to the two lower linkage arms;

a hydraulic single acting lifting jack having an acturator rod,

a lever transmission connecting to said actuator rod to said tie-rods for effecting lifting of the implement;

hydraulic supply means for supplying hydraulic fluid to the said jack;

a hydraulic distributor, interposed between the hydraulic supply means and the lifting jack, for controlling the operation of said jack, the said hydraulic distributor having a control member which is movable between an idle position in which the lifting jack is not supplied with pressure fluid, and the implement is lowered, and a working position in which the lifting jack is supplied with pressure fluid to effect lifting of the implement;

a flexible bar connected at its ends to the said lower linkage arms, and supported for rotation about a transverse axis by the fixed structure of the tractor, in such a manner that the reaction force transmitted from the ground to the implement, when the latter is lowered into the ground, causes flexural deformation of said flexible bar in a substantially horizontal plane, and

a mechanical transmission interconnecting the flexible bar and the control member of the hydraulic distributor to cause movement of said control member towards its working position, and effect lifting of the implement, when the said reaction force exceeds a predetermined value,

wherein the improvements consist in:

each said substantially vertical tie-rod being pivotally connected to the respective lower linkage arm at a point such that the weight of the implement when the latter is raised from the ground induces rotation of said linkage arm about its respective pivotal connection to the vertical tie-rod, causing flexural deformation of the flexible bar in a substantially vertical plane;

the said mechanical transmission includes a first lever fixed at one end to the central region of the flexible bar, and provided at its opposite end with a slot disposed in a vertical plane, and an L-shaped second lever, pivotally mounted at its apex about a horizontal axis transverse the fixed structure of the tractor and provided at the end of one of its arms with a pin which is engaged slidably in the slot of the first lever; the opposite end of the said second lever being connected to the control member of the hydraulic distributor; said first lever being pivotable about a horizontal transverse axis upon a fulcrum which is displaceable longitudinally relative to the fixed structure of the tractor;

the said guide slot of the first lever is elongate in a direction inclined both to the longitudinal axis of the first lever and also to the longitudinal axis of that arm of the second lever which is provided with the said pin, and

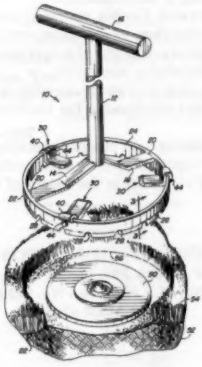
longitudinal movement of the first lever due to a forward movement of the central region of the flexible bar, and a rotation of the first lever about the said displaceable fulcrum, due to a downward movement of the central region of the flexible bar, both induce respective rotations, in opposite directions, of the associated L-shaped second lever about its articulation on the fixed structure of the tractor.

4,260,026

SPRINKLER GRASS TRIMMING TOOL

Dale I. Deckert, 4087 Lake Conway Woods Blvd., Orlando, Fla. 32806

Filed May 17, 1979, Ser. No. 39,799
Int. Cl.[3] A01B *1/00;* A01G *3/06;* B26B *3/04*
U.S. Cl. 172—25 12 Claims



1. A tool for trimming grass and roots from around sprinkler installations comprising:

a shaft having a pair of outwardly extending struts;

a cutting member formed of a generally annular plate fixed to said struts, said annular plate having a lower edge and an upper edge and a central longitudinal axis, the lower edge of said plate forming a cutting blade;

a plurality of trimming blades fixed to the inner periphery of said plate and extending inwardly from the inner periphery thereof, each said trimming blade comprising a length of flat stock material having a hook on one end engaging the upper edge of said plate opposite said cutting blade, each said flat stock blade having sharpened sides and a sharpened distal end, the portion of said flat stock blade extending from said hook to said distal end being substantially planar, the plane of said blade being substantially normal to said longitudinal axis of said annular plate; and

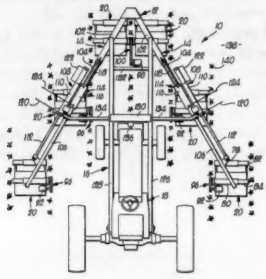
means for removably joining said trimming blade to said plate.

4,260,027

FLAIL-TYPE MULCHER CULTIVATOR

Ervin C. Langan, Atchison, Kans., assignor to W.E.F.C.O., Inc., Atchison, Kans.

Filed Apr. 17, 1978, Ser. No. 896,777
Int. Cl.[3] A01B 33/04, 39/08
U.S. Cl. 172—45 14 Claims



1. An agricultural implement comprising:

an elongated, axially rotatable axle including a first elongated tubular axle section, and a second elongated axle section telescoped within said first section, at least one of said axle sections being longitudinally shiftable relative to the other section for selective variation of the length of said axle;

respective mounting structures secured adjacent the opposite ends of said first and second sections and extending radially outwardly therefrom;

at least one elongated, flexible operating assembly disposed in spaced relationship to said axle, extending generally along the length thereof, and of length to span the distance between said mounting structures;

means mounting said operating assembly to said mounting structures in said relationship for rotation with said axle; and

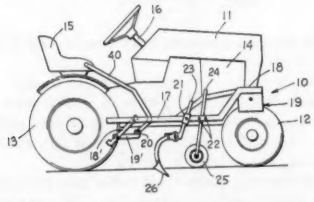
means for maintaining said flexible operating assembly in a substantially constant, spaced relationship to said axle irrespective of variances in the length of the axle.

4,260,028

EARTH WORKING ATTACHMENT FOR TRACTORS

Joseph C. Cooper, P.O. Box 386, Simpsonville, S.C. 29681

Filed Nov. 17, 1978, Ser. No. 961,625
Int. Cl.[3] A01B 63/04
U.S. Cl. 172—298 2 Claims



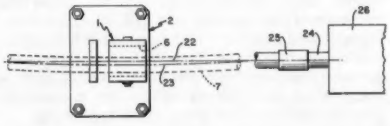
1. An earth working attachment for a tractor comprising a first support means mounted adjacent the forward end of said tractor and extending outwardly therefrom, a second support means mounted adjacent the rear of said tractor and extending outwardly therefrom, a tool bar disposed between said support means, means pivotally connecting opposite ends of said tool bar to said support means with one end being directly pivoted to a first support means and the other said end being connected by linkage to said second support means, handle means connected to said second support means moving said linkage from a tool bar raised position to a tool bar lowered earth engaging position and at least one earth working tool disposed on said tool bar, said second support including bushing means and a shaft rotatably carried by said bushing means extending outwardly therefrom, said handle means being connected directly to said shaft for effecting rotation of the same and said raising and lowering, said linkage means including a pair of links, one end of one of said links being pivotably connected to said tool bar means and one end of the other of said links being pivotably connected to said shaft with the free ends of said links being pivoted to one another, said shaft being rotatably carried below said tool bar means and together with said link provides a pivot below said tool bar means from which said tool bar means is raised and lowered by said handle means, said first support means including an angle bar secured to said tractor having a leg extending outwardly therefrom terminating in a stub shaft, said stub shaft forming one of the pivot means of said tool bar, said second support means including bracket means secured to a rear portion of the tractor, said bushing means being carried by said bracket means, and said shaft and said stub shaft being generally parallel to one another.

4,260,029

MIDPOINT CENTRALIZER

Ward D. Morrison, South Acworth, and Ralph C. Lumbra, Claremont, both of N.H., assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Dec. 27, 1978, Ser. No. 973,659
Int. Cl.[3] E21C 9/00
U.S. Cl. 173—1 7 Claims



1. A method of controlling the alignment and deflection of a drill steel of a drilling machine of the type which is supported and positioned by adjustable means and which is advanced toward the work by an adjustable feed mechanism and having a front centralizer and an indicator ring, a portion of which indicator ring encircles a drill steel carried by said drilling machine, the method comprising:

positioning and maintaining the indicator ring so that the longitudinal axis of the portion of the indicator ring encircling said drill steel coincides with the longitudinal axis of the drill steel when the latter is in an aligned and undeflected condition,

providing an aperture in said portion of the indicator ring of sufficient size to permit readily visible deflection or misalignment of the drill steel within said aperture during drilling without mechanical contact between the drill steel and said portion of the indicator ring,

observing any deflection or misalignment of the longitudinal axis of the drill steel with respect to the longitudinal axis of the portion of the indicator ring encircling the drill steel during drilling, and

adjusting the feed mechanism and the supporting and positioning means while continuously observing the indications of deflection or misalignment to return the longitudinal axis of the drill steel into coincidence with the axis of the portion of the indicator ring encircling the drill steel.

4,260,030

WELL TOOL

Fred K. Fox, Houston, Tex., assignor to Engineering Enterprises, Inc., Houston, Tex.

Filed Jun. 18, 1979, Ser. No. 49,458
Int. Cl.³ E21B *4/02*; F03B *13/02*; E21B *12/02*
U.S. Cl. 175—107 **20 Claims**

1. A well tool, comprising a body connectible as part of a well string and including inner and outer members which define an annular flow path between them through which fluid may be circulated, an axial thrust bearing carried by one member to support the other member for relative rotation with respect thereto, a first part carried by the one member for rotating therewith and having at least one opening therethrough which forms a continuation of the flow path between the members, a second part having at least one opening therethrough and mounted on the first part for relative rotation with respect thereto between a first position in which its opening is substantially aligned with the opening in the first part and a second position in which it is out of alignment therewith so as to obstruct flow throughout the flow path, a third part carried by the other member for rotation therewith and having a lower surface which is normally spaced above an upper surface on the second part a vertical distance less than the other member is free to move downwardly relatively to the one member upon wear of the bearing, so that, in response to a predetermined amount of wear to the bearing, the lower surface moves downwardly into engagement with said upper surface so as to cause said second part to rotate with said third part, and thereby permit relative rotation of said second part with respect to said first part from its first to its second position, and means for locating said second part in its second position automatically in response to its movement into said second position.

4,260,031

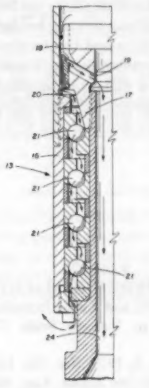
SOLIDS DIVERTER FOR A DOWNHOLE DRILLING MOTOR

G. C. Jackson, Jr., Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Sep. 14, 1979, Ser. No. 75,561
Int. Cl.³ E21B *4/02*
U.S. Cl. 175—107 **2 Claims**

1. An improved downhole drilling motor having a relatively rotatable cylindrical external member and a relatively rotatable cylindrical internal member disposed therein and defining a vertically oriented annular chamber therebetween and bearing structure interposed in said chamber for rotatably supporting said internal member from said external member, said members cooperating to define a first drilling fluid passage for delivering drillng fluid through said motor, said first passage terminating above said chamber in a second fluid passage for directing a major portion of said drilling fluid into and through said internal member and wherein the improvement comprises:

diverter passage means for directing a lesser portion of said fluid into said annular chamber from said second fluid passage, said diverter passage means defining a flow path generally oppositely directed from the second fluid passage and having a generally restricted opening from ssaid second fluid passage whereby particulate matter entrained in said drilling fluid substantially continues flowing in the normal flow path through said second fluid passage to said internal member and remains separated from said portion entering said diverter passage means therefrom.

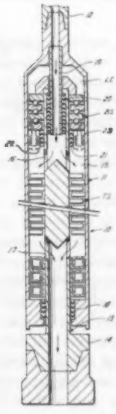


4,260,032

WELL DRILLING TOOL

Fred K. Fox, Austin, Tex., assignor to Engineering Enterprises, Inc., Houston, Tex.

Filed Nov. 26, 1979, Ser. No. 97,133
Int. Cl.³ E21B *4/02*
U.S. Cl. 175—107 **1 Claim**



1. A turbodrill, comprising a body including a case adapted to be suspended from the lower end of the string and a shaft arranged within the case to define an annular space therebetween and adapted to suspend a bit from its lower end, a bearing section having axial thrust bearings which support the shaft for rotation with respect to the case, an extension on the case fitting within the upper end of the shaft so as to permit drilling fluid circulated downwardly through the drill string to pass into the upper end of the shaft, means sealing between the shaft

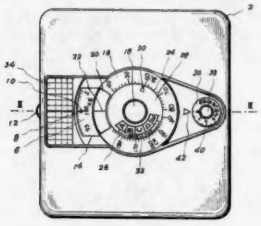
and the extension on the case as well as the case beneath such bearings in order to form a lubricant chamber in the bearings are contained, a turbine section below the lubricant chamber, a first port connecting the upper end of the shaft with the space intermediate the lubricant chamber and turbine sections, a second port connecting the space beneath the turbine section with the lower end of the shaft above the bit, additional means sealing between the shaft and housing beneath the second port, whereby drilling fluid is caused to circulate through the turbine section, in order to rotate the shaft, and out the lower end of the bit, and means for equalizing lubricant pressure within the chamber with the pressure of the drilling fluid in response to changes in the latter.

4,260,033

BODY WEIGHING MACHINE

Toshihiro Kakuta, Akashi, and Kunio Iwasaka, Kakogawa, both of Japan, assignors to Yamato Scale Company Limited, Hyogo, Japan

Filed Mar. 2, 1979, Ser. No. 16,728
Claims priority, application Japan, Aug. 30, 1978, 53-106755
Int. Cl.[3] G01G *19/44, 19/41*
U.S. Cl. 177—34 **4 Claims**



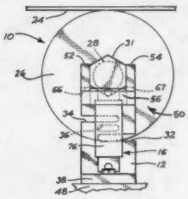
1. A body weighing machine comprising means rotatably mounted on an axis for indicating measured weight, standard weight setting means rotatable about said axis for presetting a value relating to body form and height to indicate a standard weight and calorie indicating means including a scale carried by the first said means for indicating a value relating daily diet calories to be observed for proceeding to said standard weight, and means actuated by said standard weight setting means to modify the calorie indicating means and provide a calorie indication related to the difference between said measured weight and standard weight, said means for indicating measured weight and standard weight, said means for indicating measured weight including a first rotatable annular member carrying first weight graduations and means displacing said member an amount proportional to said measured weight, said standard weight setting means including a second rotatable annular member carrying second weight graduations about a portion of its periphery and height graduations about another portion of its periphery and a third fixed annular member concentric to the first and second annular members and carrying a pointer facing said second weight graduations and a plurality of body type indications, said pointer indicating a standard body weight when a selected height indication is aligned with a selected body type indication and said calorie indicating means including calorie graduations carried on said first annular member and having relation of diet calorie-to-weight change with respect to said first weight graduations, and a calorie pointer carried by said second rotatable annular member and facing said calorie graduations.

4,260,034

CONVEYOR SCALE

George J. J. Randolph, Jr., 803 SE. Kane St., Roseburg, Oreg. 97470

Filed Jul. 12, 1979, Ser. No. 56,889
Int. Cl.[3] G01G *3/14, 11/14*
U.S. Cl. 177—211 **8 Claims**



1. Apparatus for detecting load weight on a conveyor belt comprising:

a support frame;

a roller suitable for rotation about its longitudinal axis, having first and second ends, and a surface for supporting said conveyor belt;

first and second support members located between said support frame and said roller for rotatably supporting said roller along said longitudinal axis at said first and second ends respectively and at first and second selected locations respectively with respect to said support frame when said conveyor belt is in an unloaded condition; and

first and second measuring means operating cooperatively with said first and second support means respectively for determining deviations from said first and second selected locations, and for providing an output indicative of said deviations.

4,260,035

CHIN CONTROLLER SYSTEM FOR POWERED WHEELCHAIR

John H. Loveless, Westminster, and Woodrow Seamone, Rockville, both of Md., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Jul. 26, 1979, Ser. No. 60,856
Int. Cl.[3] B62D *11/04*
U.S. Cl. 180—6.5 **29 Claims**

24. An improved controller system for enabling a person with limited mobility to control, by movements of a selected body portion, the drive motor means of a powered wheelchair or the like in order to control the speed and steering of the

wheelchair, said improved controller system comprising, in combination:

a control arm having one end mounted for pivotal movement in both horizontal and vertical directions and having its opposite end extending to a location engageable by the selected body portion of a person occupying the wheelchair,

the extending end of said control arm being simultaneously depressable vertically and swingable horizontally from side to side by the movements of said body portion, and

drive motor control means responsive to the vertical and horizontal movements of said control arm and operably connected to the drive motor means for controlling the speed of the wheelchair to vary in proportion to the vertical depression of said control arm and the left-right steering of the wheelchair to vary in proportion to the amount said control arm is swung sideways relative to a predetermined center position,

said drive motor control means comprising optical means for detecting pivotal movement of said control arm in both vertical and horizontal direction and producing speed and steering control signals in proportion thereto respectively for said drive motor means.

4,260,036

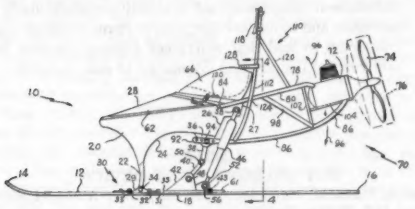
POWERED SKI

Fred L. Bissett, 1300 Florence St., Aurora, Colo. 80010

Continuation-in-part of Ser. No. 887,789, Mar. 17, 1978, Pat. No. 4,193,609. This application Oct. 13, 1978, Ser. No. 951,443

Int. Cl.[3] **B62B** *13/08;* **B62D** *57/04*

U.S. Cl. 180—182 **44 Claims**



1. A ski device, which comprises:

elongated runner means;

seating means pivotally mounted at its forward end to said runner means;

anti-sway means pivotally mounted between said seating means and said runner means;

shock-absorbing means pivotally mounted between and extending downwardly and forwardly from the rear portion of said seating means to said runner, wherein the distance between the pivotal mount of said forward end of said seating means to said runner and the pivotal mount of said shock-absorbing means to said runner is approximately the same as the distance between the front and rear bindings of a regular, foot-mounted ski; and

power-operated means connected to said seating means for propelling said device forwardly.

4,260,037

ASSEMBLY FOR SILENCING ENGINE COOLING FAN NOISE

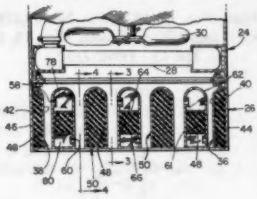
Claude J. Eline, Loury, France, assignor to Deere & Company, Moline, Ill.

Filed Oct. 29, 1979, Ser. No. 89,078

Int. Cl.[3] **B62D** *25/10;* **E04B** *1/82;* **F01N** *1/02, 1/24*

U.S. Cl. 181—204 **3 Claims**

1. A sound absorbing and attenuating panel adapted for use in silencing noises emitted by a vehicle fan, comprising: a generally rectangular framework having top and bottom sides; a plurality of baffles including hollow casings extending between the top and bottom sides and being spaced from each other to define air flow passages therebetween; said baffles including first and second sets of baffles with the baffles of the first set being arranged alternately with the second set; the casing of each baffle of the first set being perforated and being



filled with a sound absorbing material; the casing of each baffle of the second set being partitioned into a plurality of resonator chambers and being provided with a plurality of holes arranged one each for each chamber and disposed crosswise to an intended direction of air flow through the air flow passages.

4,260,038

FOLDING SAWHORSE FRAME

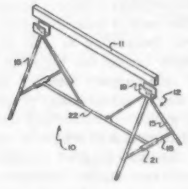
Lawrence J. Plamondon, Site 2, Box 16, St. Front, Saskatchewan, (Via Rose Valley), Canada

Filed Jul. 12, 1979, Ser. No. 56,885

Claims priority, application Canada, Feb. 28, 1979, 322472

Int. Cl.[3] **F16M** *11/24*

U.S. Cl. 182—155 **3 Claims**



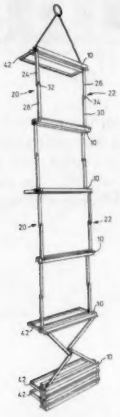
1. A sawhorse frame comprising in combination a pair of end components, member engaging means on the upper end of each of said end components, a main brace member extending between said end components and maintaining same in spaced apart relationship, said main brace member being hingedly connected to said end components whereby said end components can be moved from a folded, upper end to upper end, position upon said brace member, to an erect, spaced and parallel position, one at each end of said brace member and vice versa and detachable struts extending between said end components and said brace member when in the erected position to maintain said sawhorse frame in the erect position, each of said end components including a pair of legs coverging from the lower ends thereof towards an upper apex, and a cross member secured to said legs intermediate the ends thereof, said brace member including an elongated portion and a cross tube on each end of said elongated portion, each cross tube freely engaging around one of said cross members for pivotal action relative thereto.

4,260,039

FOLDING, COLLAPSIBLE LADDER ASSEMBLY

Paul T. Arato, 86 Rusty Crestway, Willowdale, Ontario, Canada (M2J 2Y4), and Oscar T. Arato, 25 Kensington Ave., Willowdale, Ontario, Canada (by Patricia A. Arato, legal representative)

Filed Mar. 12, 1979, Ser. No. 19,678
Claims priority, application Canada, Mar. 10, 1978, 298716
Int. Cl.[3] E06C 1/52
U.S. Cl. 182—164 4 Claims



1. A collapsible ladder assembly comprising:

a plurality of rungs extending from side to side across said assembly in mutually parallel relationship, each said rung being a channel section with an upwardly presented channel and a downwardly presented channel in side by side relationship extending across substantially the full length of the rung;

side support members extending between adjacent rungs, each of said side support members being pivotally secured at its ends to the ends of individual ones of a pair of adjacent rungs, and comprising at least two generally rigid sections pivotally connected together, intermediate the length of said side support member, about a pivot axis extending outwardly substantially perpendicularly to the direction of length of the ladder and substantially perpendicularly to the direction of length of the rungs, to permit movement of the side support members inwardly in a direction towards one another between an extended, rung separated position and a collapsed, rung closed position;

both of said channels of each rung being wide enough to accommodate two sections of a side support member in side by side relationship, each rung being adapted to abut against the next adjacent rung in alignment therewith in the collapsed position of the ladder, with the downwardly presented channel of one rung meeting the upwardly presented channel of the other rung, to define therebetween a space having the vertical height of the combined depth of both channels, to accommodate therein two collapsed side support members in lengthwise-overlapping, vertically stacked relationship.

4,260,040

SAWHORSE EXTENSION TABLES

Vincent C. Kieffer, Gretna, Nebr.

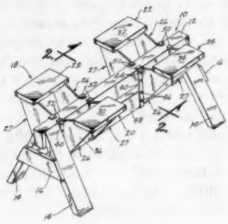
Filed Apr. 23, 1979, Ser. No. 32,147
Int. Cl.[3] B23Q 3/00
U.S. Cl. 182—181 4 Claims

1. In combination,

a sawhorse comprising an elongated crossbar and leg means connected to said crossbar for supporting said crossbar in an elevated generally horizontal position,

said leg means comprising a pair of legs connected to each end of said crossbar and extended downwardly and laterally therefrom, and further comprising a cross brace connected to and extended between the legs of each pair at a position below said crossbar and a lower crossbar connected to and extended between said cross braces,

a first workpiece support member, and



first support means for supporting said first workpiece support member on said sawhorse at a position laterally offset from said crossbar and at least as high as said crossbar,

said first support means comprising a bracket connected to said crossbar and extended upwardly and laterally therefrom,

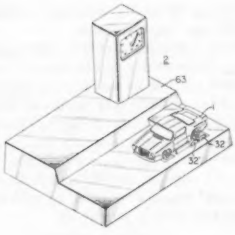
said bracket comprising an upright plate having horizontal and vertical flanges directed generally perpendicularly to said plate and to one another, said horizontal flange being connected to said first workpiece support member and said vertical flange being connected to said crossbar.

4,260,041

TOY ENERGY SUPPLY DEVICE

Kenichi Mabuchi, Matsudo, Japan, assignor to Mabuchi Motor Co. Ltd., Tokyo, Japan

Filed Feb. 14, 1979, Ser. No. 12,007
Claims priority, application Japan, Feb. 17, 1978, 53-19256[U]
Int. Cl.[3] F03G 1/00
U.S. Cl. 185—40 R 3 Claims



1. A toy energy supply device for supplying energy to an elasticity power toy in which energy is stored by twisting an elastic material comprising a power unit, rollers rotated by the power unit, an energizing means for energizing the power unit in a state when the elasticity power toy is placed in contact with the rollers, a roller stop mechanism for stopping the rotation of the rollers when the rollers rotate a predetermined amount, and characterized in that a predetermined amount of energy is stored in the elasticity power toy by means of the roller stop mechanism in a state when the elasticity power toy is placed in contact with the rollers.

4,260,042

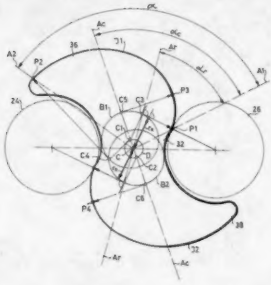
EXPANDER FOR INTERNAL SHOE DRUM BRAKES

Gábor Szalai; László Albrecht, and Péter Szij, all of Györ, Hungary, assignors to Magyar Vagon- Es Gepgyar, Györ, Hungary

Continuation of Ser. No. 901,833, May 1, 1978, abandoned. This application Jan. 21, 1980, Ser. No. 113,663

Int. Cl.[3] F16D *65/22*

U.S. Cl. 188—330 2 Claims



1. An expander for mutually displacing adjacent ends of diametrically opposed brake shoes of internal shoe drum brakes of the type consisting of an axially extending stem with a longitudinal axis and of a pair of transversely extending curved lever arms on said stem carrying convex axial involute working surfaces the involutes of which have similar base circles and define each an angular range around said longitudinal axis between a first limit line and a second limit line both limit lines passing through said longitudinal axis, a central circle with its center on said longitudinal axis, the centers of the base circles lying diametrically opposed on the circumference of said central circle and defining a control line passing through said longitudinal axis within said angular range, said control line enclosing a control angle with said first limit line, the centers of curvature associated with involute points on said first limit line and lying on the circumferences on said base circles defining a reference line which encloses a reference angle with said first limit line, said control angle being at least equal to said reference angle, the center of each base circle being disposed on the same side of said longitudinal axis as its associated involute working surface.

4,260,043

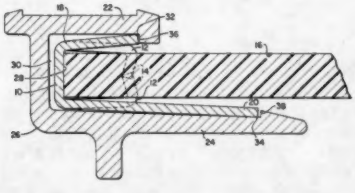
VALANCE CLIP

Richard C. Remington, Pompton Plains, N.J., assignor to Presto Lock Company, Division of Walter Kidde & Company, Inc., Garfield, N.J.

Filed Aug. 15, 1979, Ser. No. 66,873

Int. Cl.[3] A45C *13/04*

U.S. Cl. 190—49 10 Claims



7. A luggage case comprising a shell, a clip on the peripheral edge of the shell, and a valance having a channel between an inner and outer flange for receiving the edge of the shell and the clip, each flange having an inner shoulder, the clip including a base, a first pair of members extending from the base and having means for gripping the shell to secure the clip to the shell, and a second pair of straight members extending from the base and formed for abutting engagement with said shoulders to secure the valance to the shell.

4,260,044

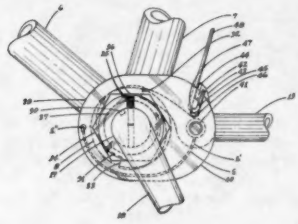
PEDAL ACTUATED BRAKE CONTROL SYSTEM

Edwin E. Foster, 1801 Camp Croft Rd., Austin, Tex. 78746

Continuation-in-part of Ser. No. 937,465, Apr. 28, 1978. This application Apr. 11, 1979, Ser. No. 29,712

Int. Cl.[3] B60L *5/06*

U.S. Cl. 192—5 9 Claims



1. For use with a bicycle having a frame with a hub-forming casing, front and rear wheels supported on said frame, a pedal crank assembly having a shaft extending through said hub-forming casing and projecting at its ends therebeyond and pedal cranks provided at each end of the shaft, and front and rear wheel caliper brakes, the improvement comprising a brake control assembly having a cam mounted on said shaft for rotation therewith and having at least one cam working surface, a plate carried on said shaft for limited swingable movement with respect thereto and being in substantially planarwise parallel relationship to said cam, a brake control cable extending from each of said front and rear caliper brakes, a link having an upper end portion operably secured to said brake control cables, said link having a lower end portion engaged to said plate, a cam follower pivoted in its rearward portion upon said plate and having a forwardly extending free end forward portion engageable with said at least one cam working surface upon back pedalling whereby such engagement effects a limited rocking of said plate with consequent downward movement of said link to effect pulling on said brake cables for bicycle braking action.

4,260,045

HINGE LOCK

Eugen Hack, Kobergerstrasse 66, 8500 Nuremberg, Fed. Rep. of Germany

Filed Jan. 5, 1979, Ser. No. 1,349

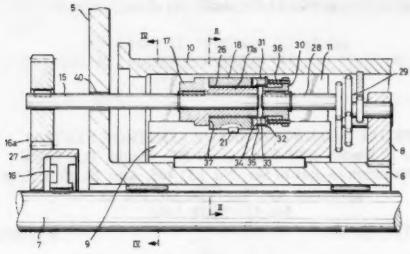
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1978, 2801618

Int. Cl.[3] F16D *67/00*

U.S. Cl. 192—8 R 19 Claims

1. A hinge lock for locking a driven shaft during standstill of a primary control shaft, particularly for the control hinges of slats on aircraft, comprising: a primary control shaft; a driven shaft actuating a control element; said driven shaft being connected by gear means to said control shaft; a tangential key free-wheel lock connected to said driven shaft; said free-wheel lock comprising at least two oppositely directed tangential

keys and locking in one direction of rotation; an engaging element driven by said primary control shaft; a key release



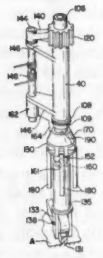
shifted by said engaging element between said tangential keys depending on the direction of rotation.

4,260,046

POWER WHEEL FOR FOLDING DOORS

Robert F. Seitz, Mentor, Ohio, assignor to The Youngstown Steel Door Company, Cleveland, Ohio

Division of Ser. No. 955,159, Oct. 27, 1978, Pat. No. 4,210,231.
This application Oct. 27, 1979, Ser. No. 84,513
Int. Cl.³ F16D *67/02*
U.S. Cl. 192—8 R **2 Claims**



1. A source of rotational power which includes in combination:

a shaft to be driven,

said shaft being a vertical element in a combination of movable mounting means of pivoted door panels of a door assembly for closing at least a portion of the end opening of a rail car,

a housing drivingly connected to said shaft and enclosing a portion thereof within a housing cavity,

at least one opening in said housing wall oriented generally transversely to said shaft communicating said cavity with the exterior,

an elongated member having an enlarged portion adjacent a first end thereof,

said cavity including an enlarged portion adjacent the inner end of said opening to receive said enlarged portion of said elongated member,

a second end of said elongated member opposite said first end extending exteriorly of said housing with an elongated portion of said elongated member connecting said first and second ends,

said elongated portion extending through said opening,

said opening being of such size and shape that said enlarged portion of said elongated member is retained in the enlarged portion of said cavity and is prohibited from passing through said opening and said elongated portion of said elongated member is free to move within said opening from a position at which it is substantially parallel to said shaft to a position at which it is substantially transverse to said shaft.

4,260,047

FRICTION DISC AND METHOD OF MAKING SAME

Terry E. Nels, Xenia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 3, 1979, Ser. No. 99,487
Int. Cl.³ F16D *13/00, 13/60*
U.S. Cl. 192—70.14 **5 Claims**

1. A process for manufacturing a friction disc for use in a clutch or brake assembly; the process comprising;

hot-mold a plurality of parallel grooves at a predetermined depth in one side of a rectangular sheet of friction material;

stamp a plurality of quarter-circle arcuate segments from said sheet of friction material, said stamping including the formation of a tab and slot at respective ends of each segment;

interlock, through the tabs and slots, four of the segments to form an annular disc with adjacent segments having the respective grooves therein displaced 90°;

bond one annular disc with the grooved surface facing axially outward, to each side of an annular metal member to form a friction disc.

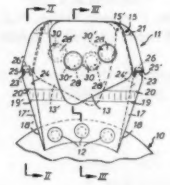
2. A friction disc produced by the process of claim **1**.

4,260,048

CLUTCH FRICTION DISC HAVING AXIAL ELASTICITY

Carlo Beccaris, Santena, Italy, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Apr. 20, 1979, Ser. No. 32,029
Claims priority, application France, Apr. 26, 1978, 78 12365
Int. Cl.³ F16D *13/69*
U.S. Cl. 192—107 C **4 Claims**



1. A clutch friction disc incorporating axial resiliency of the type comprising a flange and a plurality of radial blades integral with said flange and each radial blade being provided with an individual friction lining on each outer face thereof, each of the said blades being formed by two plates which, at least over their operative portion provided with said friction lining, extend at an overall spacing from each other, and which are urged apart resiliently by resilient means with an axial action, said plates being interconnected by coupling means with a unidirectional axial action adapted to limit the spacing of the plates, and said coupling means comprising, for one plate, a tab which is integral with said one plate, and, for the other plate,

a passage in which the said tab engages and on the edge of which said tab is hooked, said passage through which said tab passes comprising a simple recess formed in the corresponding lateral edge of said other plate.

4,260,049

DEVICES FOR AUTOMATIC WEAR COMPENSATION IN MOTOR VEHICLE FRICTION CLUTCH OPERATING MECHANISMS

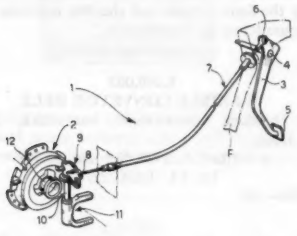
Osvaldo Fasano, Villarbasse, Italy, assignor to START S.p.A. - Studi Apparecchiature Ricercne Techniche, Turin, Italy

Filed Feb. 8, 1979, Ser. No. 10,445

Claims priority, application Italy, Apr. 28, 1978, 67974 A/78

Int. Cl.³ F16D *13/75*

U.S. Cl. 192—111 A **7 Claims**



1. In a motor vehicle friction clutch operating mechanism comprising:

a movable control lever articulated to said vehicle and operable by a driver of said vehicle to effect a working stroke for clutch disengagement;

a rocker arm pivoted to said vehicle;

a movable collar co-operating with said rocker arm to control disengagement of said friction clutch by effecting a displacement which is related to an angular position of said rocker arm, and

a tension element interconnecting said rocker arm and said control lever and which, during a said working stroke, causes a rotation of said rocker arm with a consequent displacement of said movable collar in a direction which effects disengagement of said clutch,

a device for automatic wear compensation, wherein the improvements consist in:

said rocker arm comprising a first rigid element pivoted to said vehicle; a second rigid element; and a pivot connecting said elements which is substantially parallel to said pivot axis of said first element to said vehicle;

a locking arm movable by said tension element during a said working stroke;

a pivot connecting said locking arm with said second element for pivotal movement about an axis substantially parallel to said pivot axes;

locking means between said locking arm and said first element preventing rotation of said first element relative to said locking arm when said rocker arm is rotated, during a said working stroke, by the action of said tension element while allowing rotation of said first element in an opposite direction relative to said locking arm;

resilient means connecting said first and second elements and biassing said second element towards said first element when said first element moves in said opposite direction to maintain locking of said locking means; and

fixed stop means co-operating with said second element to limit, at a predetermined value, an angular displacement of said second element in said opposite direction, so that said first element can assume a wear-compensating position relative to said second element in a rest position of said control lever.

4,260,050

PICK-UP AND DUMP MACHINE

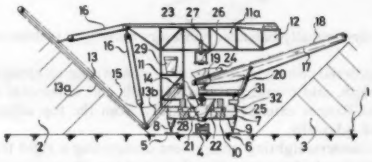
Anton Becker, Neuss, Fed. Rep. of Germany, assignor to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft, Grevenbroich, Fed. Rep. of Germany

Filed Aug. 28, 1978, Ser. No. 937,271

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1977, 2740896

Int. Cl.³ B65G *65/02, 37/00*

U.S. Cl. 198—568 **10 Claims**

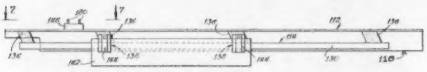


1. A conveyor loading and unloading machine adapted to travel along the space intermediate two parallel mounds of bulk material, comprising conveyor belt means extending along the intermediate space and adapted to feed bulk material to and from the machine; a lower framework mounted for controlled-speed travel along the length of the intermediate space, said lower framework being located above and in a spaced relation to a portion of said conveyor belt means; an upper framework mounted on said lower framework for horizontal swinging movement; an angled pick-up boom mounted on said upper framework for horizontal swingable movement together with said upper framework, said angled pick-up boom including a scoop conveyor embracing the length thereof, a first outward leg at which said scoop conveyor engages one mound with bulk material and a second inward leg terminated with a scoop-conveyor dump end; means for lifting and lowering said pick-up boom; said conveyor belt means forming a conveyor-belt loop adapted to travel along with said lower framework, said conveyor-belt loop including an infeed run to feed bulk material into the machine, an intermediate run and an outfeed run extending beneath said lower framework to discharge material from the machine; means for suspending said conveyor-belt loop from said upper framework rotatable about a vertical axis relative to said upper framework to prevent change in the direction of extension of said conveyor-belt loop when said upper framework is horizontally swung; an intermediate chute connected to said scoop-conveyor dump end, a V-shaped discharge chute mounted on said lower framework and adapted to receive bulk material from said intermediate chute irrespective of the position in the swingable movement of said pick-up boom and to discharge the material onto said outfeed run of the conveyor-belt; and a dump boom, said dump boom at its inward end being mounted on said lower framework for a horizontal swingable movement between the infeed run and the outfeed run and for lifting and lowering movement and having a dump conveyor arranged to receive the bulk material dumped from said conveyor-belt loop, said dump boom extending outwardly from said lower and upper frameworks at the side diametrically opposite to said pick-up boom whereby said pick-up and dump booms can be swung around so as to interchange their positions without interfering with said conveyor-belt means.

4,260,051
VIBRATORY CONVEYOR SYSTEM WITH COUNTER VIBRATION COMPONENT AND NON-VIBRATING SUPPORT

George L. Burghart, 2993 Curtiss, Lot 45B, Des Plaines, Ill. 60018

Filed Feb. 21, 1979, Ser. No. 13,452
Int. Cl.[3] B65G *27/30*
U.S. Cl. 198—760 6 Claims



1. A dynamically balanced vibratory conveyor system comprising

a. a material conveying component comprising an elongated trough, said trough having sidewalls and horizontal support flanges extending outwardly from the top edges of said sidewalls,

b. a counterweighting component comprising a rigid frame positioned adjacent to said elongated trough, and having a pair of horizontal bars extending on opposite sides of and coextensive with said trough above the level of the bottom of said trough,

c. a plurality of struts resiliently interconnecting said material conveying and counterweighting components, each of said struts comprising a resilient parallelogrammic block, one end of said block being attached to one of said support flanges of said trough and the opposite end of said block being attached to one of said horizontal bars of said frame,

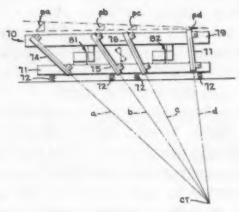
d. driving means connected between said material conveying and counterweighting components to reciprocally drive said components in opposed relative directions, and

e. means supporting said system at a substantially vibrationally neutral location upon said struts.

4,260,052
VIBRATORY FEEDER LEAF SPRING ARRANGEMENT

William R. Brown, Blairsville, Pa., assignor to FMC Corporation, San Jose, Calif.

Filed Jun. 5, 1978, Ser. No. 912,806
Int. Cl.[3] B65G *27/08*
U.S. Cl. 198—763 3 Claims

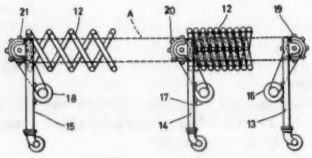


1. In a vibratory feeder for mounting to a foundation, said feeder having an elongated base assembly, at least three leaf springs projecting upwardly from the base assembly at longitudinally spaced locations, a trough assembly being supported by the upper portions of the leaf springs, said assemblies having masses with the centers of these masses being spaced apart along an upwardly extending axis, and a driver for driving the trough assembly relative to the base assembly in a direction transversely of the upwardly extending axis, said masses creating inertia forces acting upon the centers of mass of the assemblies to form a force couple that imposes a rotational motion on the feeder as a whole including the base assembly which tends to pitch longitudinally, the improvement comprising a plurality of vibration isolators spaced longitudinally of the base assembly for resiliently supporting the feeder on the foundation and isolating vibrations therefrom, said vibration isolators deflecting to permit the base assembly to pitch relative to the foundation in response to the rotational motion on the feeder as a whole, and means mounting the leaf springs to extend in non-parallel relationship between the assemblies with extension lines from each leaf spring converging to meet at a common point that is the torsional center of vibration, whereby the leaf springs deflect along non-parallel paths to guide the trough assembly in a combined motion having components of curvilinear translation and rotation relative to the base assembly, said rotation of the trough assembly due to leaf spring deflection occurring in a direction opposite to the rotational motion of the whole feeder assembly including the trough assembly created by the inertia force couple, whereby the leaf springs compensate for the rotational motion of the feeder and trough created by the force couple and thereby maintain the trough assembly parallel to the foundation.

4,260,053
FLEXIBLE CONVEYOR BELT

Hirosuke Onodera, 306-3-chome Imazunaka, Tsurumi-ku, Osaka, Japan

Filed Oct. 9, 1979, Ser. No. 82,799
Int. Cl.[3] B65G *21/14*
U.S. Cl. 198—812 1 Claim



1. A flexible conveyor belt, comprising in combination:

(a) an elongated belt-like structure with a plurality of substantially identical transverse rods (**1**) each with two outer ends, said rods being normally disposed parallel to each other, with a side structure having parallel defined outer sides;

(b) link means (**2, 3**) defining said parallel outer sides, said link means having first and second links with inner link ends pivotally connected to each other and outer link ends pivotally connected to said rod outer ends, said link means defining the inner side of said link rods (**1**);

(c) rollers (**5**) fitted to said inner side of said rods;

(d) a wire spirally wound around adjacent transverse rods so as to wrap spirally the first and second, the second and third rod in this sequence;

(e) a flexible supporting telescoping frame (**12**) for supporting said belt-like structure having gear means (**19**) with gear drive means (**13**) mounted on said frame, said gear means (**19**) engaging said rods (**1**) to drive said belt-like structure, whereby the telescoping and untelescoping of said supporting frame results in the folding and unfolding of said links, impeding pile-up of said belt-like structure.

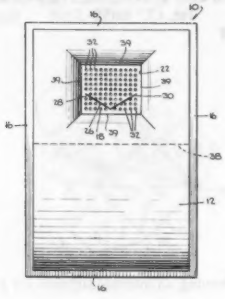
4,260,054
LAUNDRY ADDITIVE POUCH

Barbara H. Bory, Fort Lee, and Alan B. Kessler, Ramsey, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed Feb. 11, 1980, Ser. No. 120,024
Int. Cl.[3] D06F *39/02*
U.S. Cl. 206—0.5 13 Claims

1. A laundry additive pouch comprising a pair of sheets joined to one another along mutually confronting and opposed marginal edges, one of said sheets including a region remote

from said marginal edges which mutually confronts and opposes an identical such region of the other of said sheets and is joined thereto, each of said sheets having an opening confronting and opposing one another and surrounded by the joined



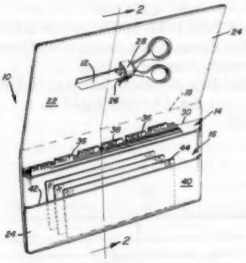
portions of said regions, and a laundry additive substance confined in said pouch between said joined marginal edges of said sheets and said joined portions of said regions of said sheets.

4,260,055

KIT FOR CLIPPING SORTING AND REDEEMING COUPONS

Ann G. Slaybaugh, 1701 Park Grove Rd., Catonsville, Md. 21228

Filed Feb. 14, 1979, Ser. No. 12,226
Int. Cl.³ A45C *11/18*
U.S. Cl. 206—232 **3 Claims**



1. A kit to enable a consumer to make maximum use of redeemable coupons when shopping comprising a flexible member foldable along a center line into overlying top and bottom portions, the inner surface of one of the portions including a pair of pockets with one of the pockets including a plurality of dividers dividing the space interiorly of the pocket into a plurality of storage areas, each divider including a tab with indicia for categorizing the spaces between the dividers to receive redeemable coupons of a particular category, the other pocket adapted to receive coupons selected from the categorized storage areas as items are selected from a store shelf thereby facilitating the redemption of the coupons when paying for the selected items, said flexible member including inner and outer panels, said pocket having the dividers therein being formed by a longitudinal slit in the inner panel and the pocket adapted to receive selected coupons being formed by an additional partial panel mounted on the inner surface of the inner panel, said panels being secured together around the periphery thereof with the opening into the storage areas facing the central fold line to retain the coupons in the storage areas when the flexible member is folded about the center fold line.

4,260,056

SUTURE AND NEEDLE HOLDER

Ralph S. Horvath, Rte. 1, Box 244B, Houghton, Mich. 49931, and Annette M. Chapel, Massie Rd., Chassell, Mich. 49916

Division of Ser. No. 873,454, Jan. 30, 1978, Pat. No. 4,168,001, which is a division of Ser. No. 715,726, Aug. 19, 1976, Pat. No. 4,105,115. This application Mar. 26, 1979, Ser. No. 23,580
Int. Cl.³ A61B *17/06*
U.S. Cl. 206—370 **1 Claim**

1. A disposable storage block for surgical needles for holding such needles selectively accessible and for selectively holding such needles for disposal comprising an elongated base of rectangular configuration in both its longitudinal and transverse cross-sections, said base being made from a resilient penetrable plastic material and having on one side thereof two parallel rows of consecutively numbered needle receiving areas, each area being of rectangular configuration and into which a needle can be inserted and retained, one needle for each numbered needle receiving area, the consecutively numbered areas being defined by parallel lines on said one side extending parallel to the longitudinal edges of said base and by lines extending parallel to the other edges of said base and intersecting said first mentioned lines, said numbered needle receiving areas permitting rapid counting of used needles inserted into said base, said one side of said base having an unnumbered area where loose needles may be inserted, said opposite side of the base having an adhesive surface covering substantially said entire opposite side, the aforesaid sides of said base being flat and parallel, a pair of pressure-sensitive adhesive strips superimposed one upon the other secure to said opposite side of said base, each of said strips having an area equal to the area of said opposite side of said base, the outer of said strips made to removed to expose a first adhesive layer defining first support securing means to secure the block for use on a support surface at a first location and thereafter removing the inner of said strips to expose a second adhesive surface defining second support securing means to secure the block upon another support surface for further use at a second location.

4,260,057

CONTAINER FOR CYLINDRICAL ARTICLES

Steen Wall-Andersen, Glostrup, Denmark, assignor to Drilbox Georg Knoblauch Werkzeugkassettenfabrik, Giengen, Fed. Rep. of Germany

Filed Apr. 17, 1978, Ser. No. 897,194
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1977, 7712499[U]
Int. Cl.³ B65D *85/20*
U.S. Cl. 206—379 **8 Claims**

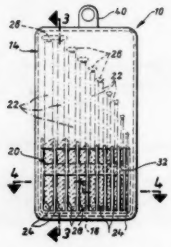
1. A container for receiving and displaying a plurality of elongated generally cylindrical articles having different diameters, such as drill bits and the like, comprising

(a) a generally rectangular dish-shaped receptacle **(12)** having a horizontal bottom wall and opposed pairs of upwardly extending side and end walls, respectively;

(b) a generally rectangular dish-shaped cover member **(14)** having a horizontal top wall and opposed pairs of downwardly extending side and end walls, respectively, said

cover member being adapted to mate with said receptacle to close the upper end thereof;

(c) means arranged with one end of said cover member for retaining said elongated articles in parallel spaced relation adjacent said top wall, said top wall containing perforation means through which the articles may be viewed while supported by said retaining means, respectively;



(d) the lower surface of said bottom wall containing a plurality of recesses of different diameters corresponding with the diameters of said articles, at least some of the recesses being arranged opposite said viewing perforation means, the bottoms of all of said recesses being closed, whereby when the container is inverted to a position in which the bottom wall is uppermost, the articles may be supported vertically by inserting the ends thereof in said recesses, respectively.

4,260,058

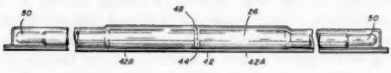
ELECTRONIC THERMOMETER

Seymour Paull, 49 Centre St., Natick, Mass. 01960, and Michael J. Marino, 92A Garfield Ave., Lynn, Mass. 01905

Division of Ser. No. 566,714, Apr. 10, 1975, Pat. No. 4,007,832, and Ser. No. 752,154, Dec. 20, 1976. This application Oct. 12, 1979, Ser. No. 84,358

Int. Cl.[3] **B65D** *85/08, 85/62, 83/02, 71/00*

U.S. Cl. 206—443 **5 Claims**



1. A cartridge for holding a plurality of probe covers which are individually useable with a probe of an electronic thermometer, said cartridge comprising, a base that is somewhat longer than it is wide, a transparent cover overlying the base and molded in a corrugated fashion to define with the base a plurality of elongated side by side compartments each at least partially in the form of a probe cover and adapted to receive two probe covers with the open ends of the probe covers facing each other, said base having a perforated tare line extending thereacross to divide the base into substantially equal halves, said cover and base having a normal position for storage wherein the probe covers are unexposed, said cover having a hinge line overlying the tare line so that when the cartridge is folded along the hinge line to its useable position the probe covers are exposed at their open ends and form two rows of probe covers, and means for securing the cover and base together, said base being substantially flat and said cover compartments being integrally formed and closed at opposite ends to permit withdrawal of the probe covers only at their exposed ends, said base halves in the normal position thereof lying in the same place and in the useable position rotated to lie in facing parallel contact with the base halves substantially sandwiched between the probe cover rows.

4,260,059

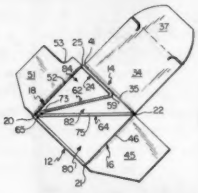
CONTAINER HAVING AN INTERNAL SUPPORT FOR FRAGILE ARTICLES AND BLANK THEREFOR

Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Jun. 1, 1979, Ser. No. 44,636

Int. Cl.[3] **B65D** *5/48*

U.S. Cl. 206—588 **41 Claims**



1. A container having an internal support for a fragile article comprises:

a front panel, a rear panel, and first and second side panels hingedly connected along generally parallel fold lines forming an enclosed chamber;

a glue flap interconnecting one of said side panels or said rear panel; and

divider means located in said chamber for supporting the fragile article,

said divider means including a first divider panel hingedly extending along a fold line from said glue flap to a corner formed by one of said parallel fold lines defining a side of a panel opposite said glue flap and a second divider panel hingedly extending along a fold line from said first divider panel at said corner to a diagonally opposite corner.

4,260,060

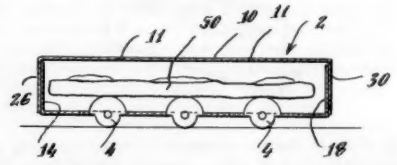
FOOD CARTON FOR MICROWAVE HEATING

Rudolph A. Faller, Edina, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Sep. 17, 1979, Ser. No. 76,216

Int. Cl.[3] **B65D** *5/70*

U.S. Cl. 206—622 **10 Claims**



1. A carton including:

a substantially planar bottom panel;

first side walls hinged to the edges of said bottom panel and extending upwardly therefrom;

a top panel hingedly secured along one edge to one of said side walls and extending substantially parallel to said bottom panel, said top panel being substantially identical in size and shape to said bottom panel;

second side walls hingedly secured to the remaining edges of said top panel and extending downwardly therefrom and secured to said first side walls;

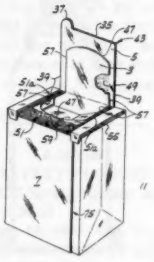
said bottom panel being cut to define a plurality of integral tabs, downward displacement of which from the plane of said bottom panel, simultaneously providing vent openings in the bottom panel and means for supporting the carton off of said bottom panel for open communication of said vent openings in one operation without the necessity of a further manipulation of said plurality of integral tabs.

4,260,061

BAG WITH OPENING AND RECLOSING FEATURE

Richard W. Jacobs, Eden Prairie, Minn., assignor to Bemis Company, Inc., Minneapolis, Minn.

Filed Jul. 5, 1979, Ser. No. 54,847
Int. Cl.³ B65D *33/20*
U.S. Cl. 206—626 **12 Claims**



1. A bag having opposed walls, a bottom closure, an open mouth, an inner ply, and an outer ply, the outer ply of one of said walls having a pair of lines of weakness extending from the mouth edge of said one of said walls in spaced relation to one another defining a closure flap adapted to be opened by grasping the outer ply at said edge and pulling it back to tear the closure flap away from the outer ply at said lines of weakness, the inner ply of said one of said walls having a line of weakness underneath said closure flap extending between said outer ply lines of weakness spaced back from said mouth edge of said one of said walls said plies being permanently adhered together rearward of said inner ply liine of weakness for tearing open of a portion of the inner ply rearward of said inner ply line of weakness on pulling said closure flap back, and said plies being releasably and resealably adhered together forward of said inner ply line of weakness by pressure-sensitive adhesive, whereby after the bag has been filled and closed it may be opened by pulling away said closure flap, the latter separating from the inner ply as enabled by the pressure-sensitive adhesive back to the inner ply line of weakness, and then tearing the inner ply at and back from the line of weakness to form an opening in the bag for removal of the contents of the bag, the flap being adapted to be re-adhered to the inner ply by the pressure-sensitive adhesive to close said opening.

4,260,062

FOREIGN OBJECT DISCRIMINATOR FOR SORTING APPARATUS

James F. Lockett, Houston, Tex., assignor to Geosource Inc., Houston, Tex.

Filed Aug. 31, 1977, Ser. No. 829,485
Int. Cl.³ B07C *5/342*; G01J *3/46*
U.S. Cl. 209—582 **6 Claims**

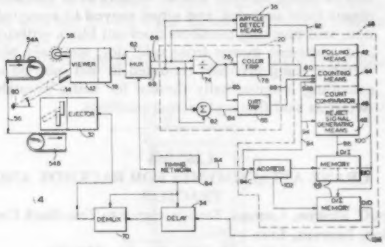
3. A sorting apparatus for sorting articles randomly disposed across an article stream comprising:

viewer means for viewing a predetermined area through which an article stream is passed and for generating an electrical characteristic signal functionally related to the presence of a predetermined physical characteristic in an article passing within the viewed area;

classification means for generating a classification signal on the basis of a comparison between the magnitude of the electrical characteristic signal and a predetermined range of signal values;

means for polling the classification means a predetermined number of discrete occasions N within a predetermined time interval initiated upon article detection;

counter means associated with the polling means for counting the number of occurrences of the classification signal; and



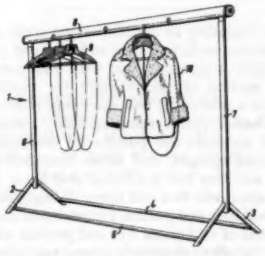
reject signal generating means for generating an electrical article-reject signal if the count recorded by the counter means exceeds a predetermined reference count.

4,260,063

APPARATUS FOR HANGING AN ARTICLE

Aubrey Bennett, Liphook; Lachlan D. C. Macneal, Haslemere, and James S. Sinclair, Bordon, all of England, assignors to B.C.M.S. Engineering & Exhibitions Ltd., England

Filed May 15, 1978, Ser. No. 905,722
Claims priority, application United Kingdom, May 31, 1977, 188/77
Int. Cl.³ E05B *73/00*; A47J *51/094*
U.S. Cl. 211—4 **8 Claims**



1. Apparatus for hanging an article having an aperture therein, the apparatus comprising:

a carrier for carrying the article, said carrier having an aperture therein;

an elongate flexible member suspended at an end portion thereof from said carrier;

a plug secured to an end portion of said flexible member remote from said one end portion thereof, said plug having abutment means and said plug being adapted to be inserted in said carrier aperture so that said abutment means extends from said carrier;

a support member for suspending said carrier therefrom, said support member having a recess adapted to receive therein said abutment means of said plug, and

means movable relative to said support member to prevent withdrawal of said abutment means from said support member, whereby an article located on said carrier may be carried thereon when said flexible member is threaded through the aperture of said article and said plug is inserted in said aperture of said carrier and said carrier is suspended from said support member with said abutment means received in said recess;

said support member comprising a tube, said recess comprising a slot extending in a circumferential direction of said tube and said movable means comprising a blocking mem-

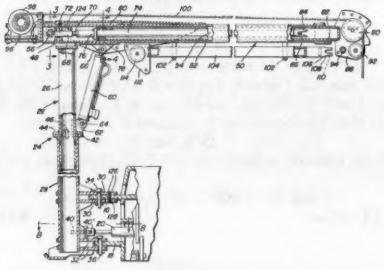
ber extending longitudinally of said tube and past said recess and shaped so that, when moved to a first position, said blocking member blocks withdrawl of said abutment means from said slot, and when moved to a second position, said blocking members does not block withdrawl of said abutment means from said slot; and said blocking member being pivotally mounted in said tube on an axis extending longitudinally thereof for being pivotable between its said first and second positions.

4,260,064

CRANE ATTACHMENTS FOR BACKHOE AND TRACTOR

John C. Ekstam, Laurens, Iowa, assignor to Trac-Back Corporation, Laurens, Iowa

Filed Dec. 12, 1977, Ser. No. 859,584
Int. Cl.[3] B66C *5/00, 23/00*
U.S. Cl. 212—231 **13 Claims**



1. A crane including an upright having upper and lower end portions, a boom including base and free end portions, pivot means pivotally supporting said base end portion from the upper end portion of said upright for oscillation relative thereto about a horizontal axis extending transversely of said upright and boom, motor means operably connected between said upright and base end portion for oscillating said boom relative to said upright, said boom base end portion being tubular and said free end portion of said boom including first and second ends, said first end being slidingly received within one end of said base end portion for extension and retraction of the second end of said boom free end portion relative thereto, a hydraulic cylinder operatively connected between said base and free end portions for effecting extension and retraction of the latter, said free end portion of said boom also being tubular, said hydraulic cylinder including a cylinder portion and a piston rod portion projecting outwardly of and extendible and retractable relative to one end of said cylinder portion, the free end of said piston rod portion being anchored relative to the other end of said base end portion of said boom and said one end of said cylinder portion including a mounting plate overlying and removably anchored relative to said first end of said boom free end portion, the second end of said boom free end portion including a horizontal internal cross member therein, the other end of said cylinder portion including an endwise outwardly opening bifurcated end embracingly engaged with said cross member.

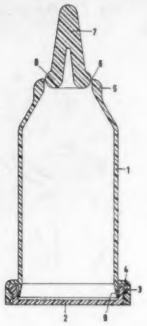
4,260,065

UNIT LIQUID CUP

Johannes A. M. van Cromvoirt, Waalwijk, Netherlands, assignor to Aloysius Johannes Baptist Aarts, Waalwijk, Netherlands

Filed Aug. 4, 1979, Ser. No. 45,132
Claims priority, application Netherlands, Jun. 8, 1978, 7806260; May 21, 1979, 7903998
Int. Cl.[3] B65D *17/40*
U.S. Cl. 215—2 **3 Claims**

1. An injection moulded unit liquid cup comprising a substantially cylindrical container being open at one end and having a cover affixed thereto, said cylindrical container tapering at the other end thereof to a cylindrical end portion of lesser diameter and greater wall thickness, and a substantially conical cap having a bead at the larger diameter end thereof



and integrally connected to said container at said other end by means of a rupturable tear seam joining said bead and said container, the wall of said cap being thicker than the wall of said container at any part thereof.

4,260,066

METHOD OF POWDER COATING A GLASS CONTAINER AND PRODUCT PRODUCED

Martin J. Hannon, Martinsville, and Richard K. Greene, Summit, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 966,694, Dec. 5, 1978, Pat. No. 4,201,834, which is a continuation of Ser. No. 844,812, Oct. 25, 1977, abandoned. This application Sep. 27, 1979, Ser. No. 79,636
Int. Cl.[3] B65D *11/16;* **B05D** *3/02, 1/36*
U.S. Cl. 215—12 R **4 Claims**

1. A glass container coated with a smooth coating, wherein said coating is applied as a non-tacky powder composition, is heated to form a smooth, molten coating and is cooled to ambient temperatures, wherein the non-tacky powder composition comprises

(A) from about 85 to about 95% by weight tacky powder particles comprising a melt blend mixture of

(1) from about 50 to about 70% by weight of a block copolymer which is selectively hydrogenated to at least about 98% and having at least two kinds of polymer blocks wherein one polymer block is designated by A and a second polymer block is designated by B such that prior to hydrogenation,

(a) each A is a polymer end block comprising styrene and having a number average molecular weight in the range of from about 5,000 to about 75,000, said blocks A comprising from about 15 to about 35% by weight of the total block copolymer, and

(b) each B is a polymer mid block having a number average molecular weight of from about 30,000 to about 300,000, and comprising a polymer formed from alpha, gamma butadiene, said blocks B comprising from about 65 to about 85% by weight of the total block copolymer, and

(2) from about 30 to about 50% by weight of at least one melt flow modifier selected from the group comprising copolymers of monovinyl arenes and alpha alkyl monovinyl arenes, wherein the aromatic portions of said modifier are about 30 to about 90% hydrogenated to remove the aromatic character thereof, and

(3) from about 2 to about 5% by weight of at least one adhesion promoter selected from the group consisting of substituted silanes, the corresponding silanols, siloxanes, and mixtures thereof, and

(4) from about 1 to about 3% by weight of at least one member of the group consisting of stabilizers against oxidation and stabilizers against ultraviolet light, and

adhering to the tacky surface of these tacky particles in a noncontinuous layer,

(B) from about 5 to about 15% by weight small solid particles which are hard and non-tacky and which comprise

(1) from about 95 to about 97% by weight of at least one melt flow modifier of the group described in (A) (2) with the provision that the melt flow modifier have a glass transition temperature of at least about 20° C., and

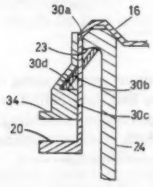
(2) from about 3 to about 5% by weight of an adhesion promoter.

4,260,067

SAFETY CLOSURE

Roman Andruchiw, 137 Spring Garden Ave., Willowdale, Ontario, Canada (M2N 3G6)

Filed Oct. 18, 1979, Ser. No. 85,865
Claims priority, application Canada, Oct. 20, 1979, 313855
Int. Cl.³ B65D *55/02*
U.S. Cl. 215—225 **8 Claims**



1. A closure for a container having a mouth defined by a brim that includes an outwardly directed lip, said closure comprising an inner cap; a latch which is normally in a locked position in which said latch extends beneath said lip for securing said inner cap over the mouth of the container but which is deflectable to an unlocked position in which said latch is withdrawn from beneath said lip; an outer cap having means which contacts said inner cap for preventing separation of said outer cap from said inner cap when the latter is over the mouth of the container but which permits limited relative movement between said outer and inner caps, said outer cap when moved relative to the inner cap in a direction toward removal thereof from the container moving from a first position to a second position; deflecting means which, when said outer cap is in said first position contacts said latch and causes same to deflect to said unlocked position and which when said outer cap is in said second position, permits said latch to assume said normally locked position; and means for holding said outer cap in said second position, said outer cap being removable from the container by applying a force thereto opposed to the holding means to cause said outer cap to move to said first position and thereafter causing simultaneous removal of said outer and inner caps from the container.

4,260,068

STORAGE TANK AND FLOATING ROOF WITH A GAUGE WELL HAVING A FLOATING SEAL THEREIN

Robert R. McCarthy, East Brunswick, and John J. Lipinski, Sewell, both of N.J., assignors to Texaco Inc., White Plains, N.Y.

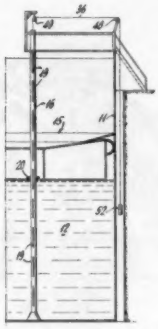
Filed Jan. 10, 1980, Ser. No. 111,131
Int. Cl.³ B65D *88/42*
U.S. Cl. 220—221 **5 Claims**

1. In combination with a storage tank for containing a volatile product and having a floating roof and including a gauge well therein,

said well being attached to said tank and having perforations extending along the length thereof,

said floating roof resting on said product in the vicinity of said well and having a seal between it and the outside of said well,

said well extending above the maximum level of product,



a vapor seal to minimize vapor loss from said gauge well, comprising

a body for floating on said product inside said well,

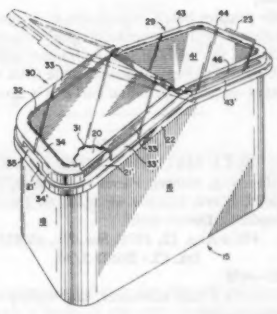
resilient seal means integral with said body for creating a vapor seal around the inside surface of said well.

4,260,069

INGREDIENT BIN COVER

David A. Juergens, Winchester, Va., assignor to Rubbermaid Commercial Products Inc., Winchester, Va.

Filed Apr. 10, 1980, Ser. No. 138,824
Int. Cl.³ B65D *43/14*
U.S. Cl. 220—331 **18 Claims**



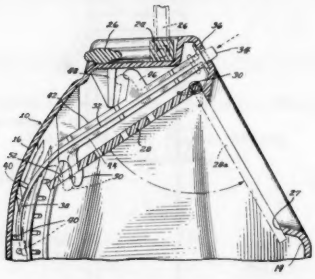
1. In combination with an ingredient bin having side walls with their upper ends forming an opening, a cover having a rear part and a front part movably associated therewith, said parts when extended closing said opening, one part having exterior side rails and the other part having lugs projecting laterally inward for rockable and slidable engagement with said rails, thereby permitting both hinging and sliding movement of said front part to give access to said opening.

4,260,070

LATCH FOR BAIT BUCKET DOOR

Robert E. Pierson, Sugar Grove, Ill., assignor to Plano Molding Company, Plano, Ill.

Filed Mar. 17, 1980, Ser. No. 130,697
Int. Cl.³ B65D *43/24*
U.S. Cl. 220—335 **1 Claim**



1. An improved latch means for selectively engaging and releasing an inwardly retractable access door to the interior of a container of the class described, which container has a front wall with an opening therein, an opposed rear wall and a connecting top wall interposed therebetween, which door is hinged to said front wall adjacent said opening and adapted to serve as a closure therefor, wherein said latch means comprises the combination of:

an elongated strip having a mid-section and opposed ends integral therewith;

said mid-section being relatively inflexible and having a longitudinally disposed guide portion and latching means adapted to engage cooperating means on said door;

one of said ends comprising a protruding portion adapted to be engaged in longitudinally slidable relation in a cooperating aperture in said front wall adjacent said opening and being operable by manual pressure to cause retraction of said strip;

the other of said ends comprising a relatively resilient extension adapted to bear in yieldable relation against said rear wall in such a manner as to urge said strip toward said aperture;

said guide portion being engageable in longitudinally slidable relation with cooperating guide means protruding from one of the walls of said container; and

said latching means being disengageable from said cooperating means on said door when said trip is caused to retract.

4,260,071

BULK MATERIAL CONTAINER

Robert A. Bamburg, Hebert; Farris N. Duncan, West Monroe, and Roger M. Floyd, Monroe, all of La., assignors to Manville Forest Products, Dover, Del.

Filed Aug. 13, 1979, Ser. No. 65,815
Int. Cl.³ B65D *5/58*
U.S. Cl. 220—445 **2 Claims**

1. A topcap for a bulk container, said topcap comprising:

(a) a central panel;

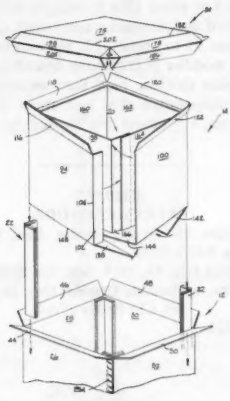
(b) a pair of opposed inner side panels hingedly attached to said central panel;

(c) a pair of opposed outer side panels hingedly attached to their respective inner side panels;

(d) a pair of opposed inner end panels hingedly attached to said central panel;

(e) a pair of opposed outer end panels hingedly attached to their respective inner end panels; and

(f) a plurality of gusset panels, each of said gusset panels being hingedly connected to an inner side panel and an inner end panel, each of said gusset panels containing a diagonal score line extending from an innermost corner adjacent the central panel to an outer corner of said gusset panel, each of said gusset panels serving to provide a leak proof corner to the topcap; each of said gusset panels



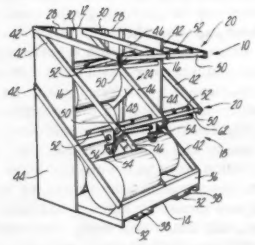
further having a cutout portion along the area defined by said diagonal score line, said cutout portion serving as a retention area for positioning a banding strap and securing the topcap to the bulk material container.

4,260,072

SHIPPING, TRANSPORTING AND DISPENSING CONTAINER FOR CYLINDRICALLY SHAPED OBJECTS

Joseph R. Quasarano, 620 South Oxford, Grosse Pointe Woods, Mich. 48236

Continuation of Ser. No. 878,820, Feb. 17, 1978, abandoned.
This application Feb. 26, 1980, Ser. No. 124,704
Int. Cl.³ A47F *1/00*
U.S. Cl. 221—92 **15 Claims**



1. A container for a plurality of cylindrical objects comprising:

a base;

an upright frame structure mounted to said base for cooperation therewith;

means for mounting said upright frame structure to said base;

gravity feed means mounted to said base and to said upright frame structure in a predetermined spaced relationship such that when said cylindrical objects are placed upon said gravity feed means, said cylindrical objects are first moved towards said frame structure, thence along said frame structure towards said base as a result of gravitational force;

means for stopping said cylindrical object mounted to said gravity feed means, said stop means stopping said cylindri-

cal objects at a predetermined distance from said upright frame structure, said means for stopping further comprising a hand operated releasable stop means mounted to said gravity feed means for selectively preventing and allowing movement of the cylindrically shaped objects along said base in a direction away from said upright frame structure, such that, when said plurality of cylindrical shaped objects are placed on their cylindrical side upon said gravity feed means, the force on each cylindrical object causes a first cylindrical object to move along said gravity feed means towards said upright frame structure, thence move downwardly adjacent said upright frame structure toward said base, thence move along said base toward said hand operated releasable stop means, each of said plurality of cylindrical objects following said path defined by said first cylindrical object to form a contiguous array of cylndrical objects along said path, such that when said hand operated releasable stop means is actuated, said first cylindrical object moves along said base past said hand operated releasable stop means to a predetermined position away from said upright frame structure;

means for mounting said gravity feed means to said base and upright frame structure; and

means for mounting said stop means to said gravity feed means.

4,260,073

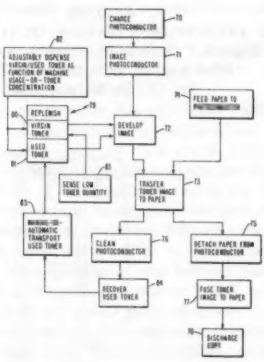
VIRGIN TONER AND USED TONER SUPPLY APPARATUS AND METHOD

Gerald W. Baumann, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 23, 1978, Ser. No. 936,286

Int. Cl.[3] G03G *15/00*

U.S. Cl. 222—1 **13 Claims**



1. A method of supplying toner to the developer unit of an electrophotographic device having a reusable photoconductor, comprising the steps of:

providing a first toner supply having toner of a first characteristic and first metering means;

providing a second toner supply having toner of a second characteristic and second metering means; and

providing motor means and adjustable coupling means coupling said motor means to said first and second metering means, said coupling means being adjustable to facilitate control of the proportion of toner of said first and second characteristic which is supplied to said developer unit upon operation of said motor means.

4,260,074

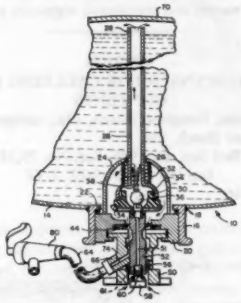
METHOD AND APPARATUS FOR DISPENSING BEER THROUGH A GAS LINE

Vincent J. Cerrato, Pomona, N.Y., assignor to Vending Components Inc., Hackensack, N.J.

Filed Nov. 9, 1979, Ser. No. 92,649

Int. Cl.[3] B67D *3/04*

U.S. Cl. 222—1 **6 Claims**



1. Apparatus for dispensing beer, or the like, including a keg containing beer under pressure, a valve fitting opening through one end of the keg, a down tube extending from the valve fitting to a location adjacent to the other end of the keg, a first passage in the valve fitting, a valve movable between a closed position that shuts off the communication between the first passage and the down tube and another position that puts the first passage in communication with the down tube, a branch passage that communicates with the interior of the valve fitting that surrounds the first passage without communicating with said first passage in the valve fitting, a beer dispensing conduit communicating with the branch passage for dispensing beer from the keg when the keg is oriented with the valve fitting at the bottom of the keg, said valve having a control element by which said valve can be opened for flow of gas through the down tube when the keg is upside down and the liquid in the keg is at a level lower than the end of the down tube.

4,260,075

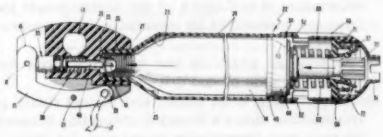
AUTOMATIC INFLATOR

Glenn H. Mackal, Buena Vista Dr., Ringwood, N.J. 07456

Filed Aug. 1, 1978, Ser. No. 930,035

Int. Cl.[3] B67B *7/24*

U.S. Cl. 222—5 **14 Claims**



1. In an automatic inflator for gas-inflatable articles, said inflator having a body, a gas capsule-holding means on the body, a capsule-piercing pin, a plunger for advancing the piercing pin and capsule relatively toward each other to pierce the capsule, the plunger having a stem, a transverse surface on the stem, resilient means which when stressed constantly urges the plunger and the percing pin relatively toward each other, and a latching means cooperating with the transverse surface on the stem for selectively holding the plunger from movement toward the piercing pin, the improved latching means which comprises a sleeve telescoped about the plunger, the sleeve being made up of a plurality of axially extending segments having teeth on the inner surface thereof in engagement with

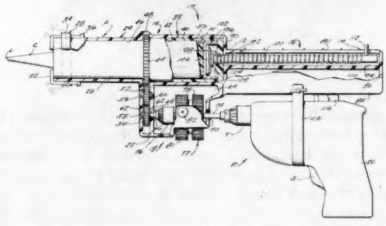
the transverse surface on the plunger when the plunger and piercing pin are in the cocked position relative to each other, the segments of the sleeve being mounted for being swung radially outwardly to free the teeth from engagement with the transverse surface, a water-destructible ring disposed around the segments to hold the teeth thereon in engagement with the transverse surface on the plunger, and means engaging the outer surface of the ring in locations between the segments of the sleeve to hold the ring in compression in the spans thereof between such means and successive segments of the sleeve.

4,260,076

POWERED DISPENSER FOR CAULKING CARTRIDGE CONTENTS

Carl P. Bergman, Pompano Beach, Fla., assignor to Whirlco, Inc., Pompano Beach, Fla.

Filed Sep. 14, 1979, Ser. No. 75,241
Int. Cl.³ B67D *5/22, 5/42*
U.S. Cl. 222—46 **10 Claims**



1. For interposition between

(a) a rotary power tool having a chuck for gripping a shaft to be rotated and a switch means for actuating the rotary power tool to rotate the chuck, and

(b) a tubular container of viscous plastic material having a forward end wall with a tubular dispenser spout projecting forwardly therefrom, having a quantum of viscous plastic material contained therein, and having a piston sealingly slidingly received in the tubular container from the rear end thereof, which may be advanced by pushing forwardly thereon from the exterior of the rear face of said piston in order to extrude a bead of the viscous plastic material out of the tubular dispenser spout,

(c) an adapter comprising:

a body having means for mounting said body on said rotary power tool;

a rotary power transmission means mounted on said body and having as an input end thereof a chuckable shaft for securement in said check of said rotary power tool;

a drive screw mounted for essentially axial movement on said body;

means between said body and said drive screw for preventing rotation of said drive screw;

means providing as an output end of said rotary power transmission means a threaded connection between said rotary power transmission means and said drive screw; and

a plunger means mounted on said drive screw at the forward extent of said drive screw for abutting contact with said rear face of said piston of said container;

the rotary power transmission means including a tubular body having a ring gear externally provided thereon near the forward end of said tubular body and an annular plunger drive plate in driving engagement with the tubular body near the rear end thereof;

the plunger drive plate being internally threaded and threadably mounted on said drive screw as said output end of said rotary power transmission means; and

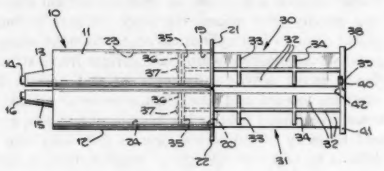
the tubular body being journalled in the receiver for essentially rotary movement therein.

4,260,077

DUAL SEPARABLE DISPENSER

William Schroeder, Van Nuys, Calif., assignor to Aelco Corporation, Van Nuys, Calif.

Filed Oct. 4, 1979, Ser. No. 81,645
Int. Cl.³ B67D *5/42*
U.S. Cl. 222—137 **6 Claims**



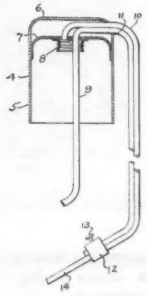
2. A dual separable dispenser for simultaneously dispensing two materials comprising a pair of single piece barrels of substantially equal length, each barrel having an outflow orifice at one end and an opening at the opposite end, there being a separable connection between the barrels along adjacent sides holding the barrels in fixed laterally separated parallel relationship forming a space therebetween with outflow orifices adjacent each other, a single piece plunger for each barrel, and a separable attachment between said plungers holding said plungers together in fixed laterally spaced relationship at one end of each while respective opposite ends are in sliding position in the corresponding barrels, said barrels being parallel to each other with said barrels and said plungers being separable allow each barrel and the respective plunger to be operated individuallv, the separable connection between the barrels being in said space and comprising a pair of complementary sliding members, each member being integrally formed with the respective barrel extending radially outwardly from the respective barrel and providing a stiffening means between the barrels throughout the length of said barrels.

4,260,078

BOTTLE ATTACHMENT HAVING OUTLET AND VENT

Ryan K. Kephart, P.O. Box 706, Murphy, N.C. 28906

Filed Aug. 16, 1979, Ser. No. 67,131
Int. Cl.³ B67D *3/00, 5/64*
U.S. Cl. 222—184 **6 Claims**



1. A dispensing attachment for a bottle comprising a tubular member having the same contour as that of the bottle but slightly larger than the bottle so that it can be slipped over the bottle when the cap is removed, closure means to fit over the opening in the neck of the bottle, means in said tubular member to secure said closure means at a position to fit over the opening in the neck of the bottle when said attachment is placed over said bottle, said tubular member being of sufficient strength to act as a base for said bottle when said bottle and

member are inverted, a dispensing tube extending through said closure means and sealed therein, a vent tube extending through said closure means and sealed therein and long enough to extend to a point near the bottom of said bottle when said tubular member is placed over said bottle and said vent tube is inserted therein, said tubular member having an opening in the side thereof between said closure means and the end of said tubular member to permit said tubes to pass therethrough, means normally closing the end of said vent tube, means normally closing the end of said dispensing tube, manually operable means for opening said dispensing tube to permit liquid to flow through said tube from said bottle, and means for opening the end of said vent tube while liquid is flowing through said dispensing tube.

4,260,079

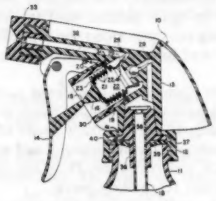
MANUALLY OPERATED LIQUID DISPENSERS

John R. Cary, Miami Lakes, and Walter H. Wesner, Ft. Lauderdale, both of Fla., assignors to The AFA Corporation, Miami Lakes, Fla.

Continuation-in-part of Ser. No. 754,056, Dec. 23, 1976, abandoned, which is a continuation of Ser. No. 626,819, Oct. 29, 1975, abandoned. This application Jan. 25, 1978, Ser. No. 872,198

Int. Cl.[2] B05B *11/04*

U.S. Cl. 222—209 **22 Claims**



1. A hand held manually operable liquid dispenser comprising

(a) a component retaining body having a pump chamber, an inlet port and an outlet port, said ports each having a connection to said pump chamber,

(b) an actuatable compressible and expansible variable volume bellows defining said pump chamber, said bellows having an expanded condition when at rest, a closed end, an open end, and multiple flexible wall sections that define a portion at least of the volume of said pump chamber, said flexible wall sections having inherent elastic memory and being operative to return said bellows to its normal expanded state after actuation to its compressed state, compression and expansion of said bellows tending, respectively, to develop fluid pressures higher and lower than ambient pressure in said pump chamber,

(c) a cavity located within the component retaining body, the depth of said cavity being substantially co-extensive with the length of said bellows in its expanded condition, said bellows being nested within said cavity,

(d) pressure responsive valve means in said body associated with the open end of said bellows and operating in response to the pressure in said pump chamber selectively to control the flow of fluid through said inlet and outlet ports, opening said inlet port while maintaining said outlet port closed, and opening said outlet port while maintaining said inlet port closed, when the fluid pressure in said pump chamber is lower and higher, respectively, than the ambient pressure, thereby alternately causing fluid to be drawn from a source thereof through said inlet port into said pump chamber and discharged from said pump chamber through said outlet port.

4,260,080

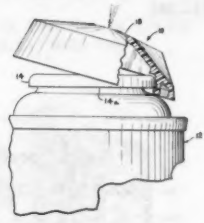
CONTINUOUS SPRAY DEVICE FOR AEROSOL VALVES

Adolph R. Gailitis, Winchester, Mass., assignor to Summit Packaging Systems, Inc., Manchester, N.H.

Filed Jan. 18, 1980, Ser. No. 113,398

Int. Cl.[3] B65D *83/14*

U.S. Cl. 222—402.14 **3 Claims**



1. An aerosol dispenser comprising a container having a valve mounting cup crimped to the upper end of the container in a circular bead, the cup having a tiltable discharge stem, and a generally mushroom-shaped actuator having a hub with a central passage fitting snugly over the stem and providing an outlet orifice for the dispenser, the actuator being rigid and having adjacent its periphery a downward leg having latch element integral therewith, the latch element comprising a circular base and tapered distal end terminating in an inwardly facing hook, whereby downward pressure movement of the side of the actuator over the latch causes the tilting of the valve stem and the locking of the latch under the edge of the bead to hold the valve on, continuously discharging the container, and subsequent downward movement of the actuator on the side opposite the latch breaks the latch away from the bead to turn off the valve.

4,260,081

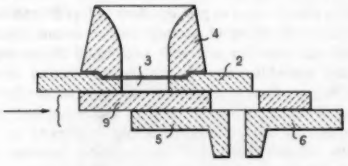
SLIDE-VALVE OUTPUT REGULATING THROTTLE

Pol Detalle, and Richard Detalle, both of 11, rue Edouard-Herriot, Villers-les-Nancy, France

Filed Aug. 7, 1978, Ser. No. 931,524

Int. Cl.[3] B22D *41/08*

U.S. Cl. 222—600 **22 Claims**



1. Slide valve throttle for controlling flow of high temperature product, notably molten metal, through a tap hole formed in a bottom side of a vessel, said slide valve throttle comprising:

two regulating slide plates having confronting surfaces defining an opening aligned with an axis of said tap hole of said vessel, the plates being mounted on the vessel for coplanar sliding movement towards and aways from each other to regulate the size of the opening while maintaining for the tap hole two orthogonal planes of symmetry; and

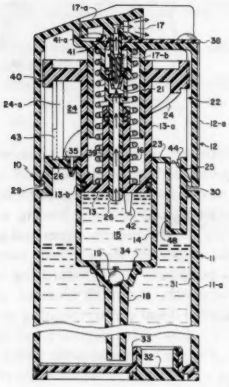
closure means movable into a closure position for positioning a continuous face to prevent flow of product through the tap hole.

4,260,082

MANUALLY OPERATED LIQUID DISPENSING DEVICE

Gerald A. Rooney, Hollywood; Richard E. Kresge, Miami, and Jerry H. Miller, Miami Lakes, all of Fla., assignors to The AFA Corporation, Miami Lakes, Fla.

Continuation of Ser. No. 637,924, Dec. 5, 1975, abandoned. This application Nov. 18, 1977, Ser. No. 852,761
Int. Cl.[3] G01F 11/04
U.S. Cl. 222—340 20 Claims



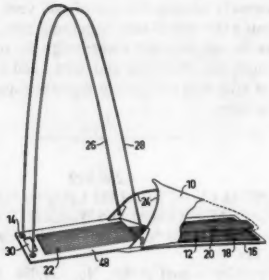
1. A liquid dispensing device of the type which comprises a container adapted to contain a body of liquid to be dispensed and which is formed into relatively rotatable sections, a relatively reciprocable piston and cylinder defining a pressurizable chamber therebetween, resilient means operatively engaging one of said piston and cylinder and biased to tend to produce relative motion therebetween in a direction to pressurize the chamber, liquid dispensing means mounted on the device externally thereof, first conduit means communicating with the body of liquid and the chamber, said first conduit means including a check valve to prevent flow of liquid from the chamber to the body of liquid, second conduit means communicating with the chamber and with said liquid dispensing means, manually operable valve means in said second conduit for controlling the flow of liquid therethrough, means for connecting one of said rotatable sections to the piston and means for connecting the other of said rotatable sections to the cylinder whereby relative rotation of said rotatable sections produces relative movement of said piston and cylinder to compress said resilient means and to draw liquid from said body of liquid into said chamber, a first operating member on said piston, a second operating member on said cylinder positioned to cooperate with said first operating member in mutual cooperative relation, said two members being urged toward one another by said resilient means, each of said members being connected to one of said rotatable sections, relative rotation of said sections acting through said members thereby producing relative reciprocable movement of said piston and cylinder and, one of said members further including delay means adapted to engage said other member for terminating relative reciprocable movement of said piston and cylinder and compression of said resilient means before relative rotation of said rotatable section is terminated.

4,260,083

PULL-ON DEVICE FOR STOCKINGS

Nils O. G. Aslin, Akergränd –, 85247 Sundsvall, Sweden

Filed Dec. 8, 1978, Ser. No. 967,728
Claims priority, application Sweden, Dec. 14, 1977, 7714228
Int. Cl.[3] A47J 51/06
U.S. Cl. 223—111 11 Claims



1. A device for pulling stockings onto a user's foot comprising:

a stocking-foot resembling piece for holding the stocking to be applied, said stocking-foot resembling piece being made of substantially soft material and having a toe portion and an open portion, said stocking-foot resembling piece being cut open along the top side in the longitudinal direction and having a stiff and resilient central sole portion;

a protruding plate means connected to the open portion of said stocking-foot resembling piece, said protruding plate means being at least partially made of a flexible material and extending forward beneath said stocking-foot resembling piece and rearwards from the open portion of said stocking-foot resembling piece;

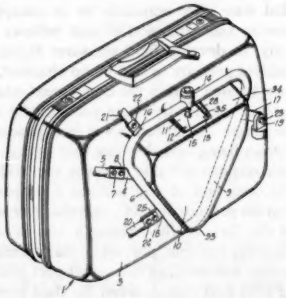
and means for pulling the stocking onto a foot by pulling the stocking-foot resembling piece along the foot.

4,260,084

VEHICLE LUGGAGE RACKS AND CONTAINERS CARRIED THEREBY

John A. Warren, Jr., Yorba Linda, Calif., assignor to Dan Gurney Cycle Products, Santa Ana, Calif.

Continuation-in-part of Ser. No. 708,391, Jul. 26, 1976, abandoned. This application Mar. 9, 1978, Ser. No. 884,760
Int. Cl.[3] B62J 7/02
U.S. Cl. 224—32 A 23 Claims



1. The combination comprising:

a container for holding articles to be transported and which is openable to provide access to a space in the container;

said container having a wall adjacent said space which carries a protruding structure projecting outwardly from the wall in a predetermined direction and away from said space;

a frame adapted to be mounted on a vehicle and to which said container is removably connectable

said frame forming a recess dimensioned to permit movement of said protruding structure of the container into said recess in said direction in which the protruding structure projects and to permit movement of said protruding structure out of said recess in the opposite direction, and to permit movement of said protruding structure while in said recess in a direction transversely of said direction in which the protruding structure projects, and to a retained position;

said protruding structure and said frame having interengageable portions which extend along two sides of said protruding structure and recess and converge toward one another as they advance in said transverse direction and which form shoulders interfitting in said retained position of the protruding structure in a relation blocking movement of the protruding structure out of said recess in said direction which is the opposite of said direction of projection of the protruding structure; and

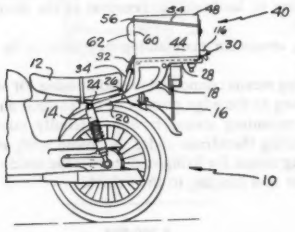
a releasable retaining unit carried by said frame at a third side of said protruding structure and recess and receivable in the path of and blocking movement of said protruding structure relative to said frame in a direction the reverse of said transverse direction from said retained position and thereby releasably holding said container against removal from the frame.

4,260,085

MOTORCYCLE ICE CHEST

John A. Jefferson, 5807 14th St., NW., Apt. 100, Washington, D.C. 20011

Division of Ser. No. 822,240, Aug. 5, 1977, Pat. No. 4,195,757.
This application Mar. 14, 1980, Ser. No. 130,379
Int. Cl.[3] B62J *7/04*
U.S. Cl. 224—32 R **10 Claims**



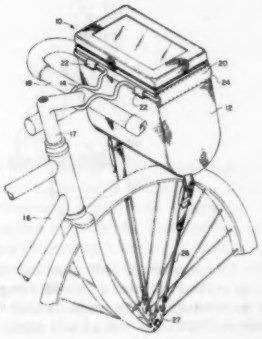
1. For use with a motorcycle having a rearwardly mounted carrier rack, apparatus which comprises container means for fastening to said carrier rack and including a cushioned back rest on an outer wall thereof, an ice compartment, a dry compartment adjacent said ice compartment, non-insulative waterproof divider means separating said dry compartment from said ice compartment for maintaining articles placed in said dry compartment at a lowered temperature, said ice compartment including separate container means for containing fresh water and apertured tray means for supporting a plurality of beverage containers, said apertured tray means including a cut out portion for positioning said separate container means therein.

4,260,086

SUPPORT DEVICE FOR BICYCLE HANDLEBAR PACK

Edward K. Hine, Jr., Louisville, and Gregory S. Hine, Boulder, both of Colo., assignors to Hine-Snowbridge, Inc., Boulder, Colo.

Filed Feb. 13, 1980, Ser. No. 121,189
Int. Cl.[3] B62J *7/06*
U.S. Cl. 224—36 **10 Claims**



1. In the combination of a wire support adapted to attach to and extend from a bicycle, a pack configured to engage the wire support and having an exterior surface of the pack adjacent a length of the wire support, and means to secure the pack to the adjacent length of the wire support;

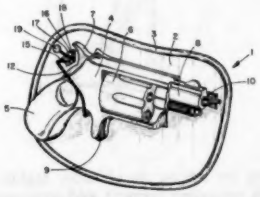
the improvement comprising, at least one resilient clip member of a spring material shaped to engage the wire support at points spaced more than one hundred eighty degrees around the wire support, the resilient clip member being attached to the pack and comprising the means to secure the pack to the adjacent length of the wire support.

4,260,087

BELT BUCKLE HOLSTER

Samuel L. Leaver, 3212 Alta Dr., Las Vegas, Nev. 89107

Filed Jul. 30, 1979, Ser. No. 61,746
Int. Cl.[3] A45C *11/00*
U.S. Cl. 224—163 **1 Claim**



1. An ornamental belt buckle comprises a rigid plate, a pistol having a grip portion and a barrel portion mounted on the plate, mounting means to removably secure the pistol to the plate, and attachment means to attach a belt to the buckle, the mounting means comprising releasable fastening means for securing a grip portion of the pistol to the plate, said fastening means consisting of a clip comprising a wire having a diameter of from 0.030" to about 0.060" having one end thereof pivotally connected to the plate, said clip adapted to extend completely over the grip portion of the pistol and to bias the grip portion toward the plate while the pistol is in place on the

buckle, latch means for releasably securing another end of the clip to the plate, and retaining means for securing the barrel portion of the pistol to the plate comprising a lug which interconnects with a bore in the barrel.

4,260,088

SHOULDER-SUPPORTED GOLF CLUB CARRIER

William L. Buckner, P.O. Box 1041, Sanford, N.C. 27330

Filed Jun. 25, 1980, Ser. No. 162,753
Int. Cl.[3] A45C *11/38*
U.S. Cl. 224—202 **4 Claims**

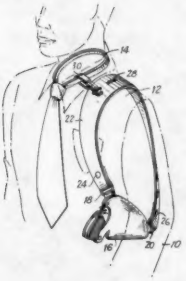
1. A shoulder-supported golf club carrier comprising: a flexible strap curved to form a shoulder-engaging portion; a stabilizing member fixedly secured to said strap a predetermined distance from each end of said strap; an endless loop affixed to each end of said strap, the strap portions adjacent said stabilizing member extending loosely through said loops to form free-running nooses in which golf club shafts are releasably securable; and a flexible accessory container movably secured to said stabilizing member.

4,260,089

SHOULDER HOLSTER WITH MEANS TO SECURE THE SAME TO WEARER'S GARMENT

Joseph Daleo, 156 E. 3rd St., Deer Park, N.Y. 11729

Filed Jan. 19, 1979, Ser. No. 4,682
Int. Cl.[3] A45F *5/02*; F41C *33/02*
U.S. Cl. 224—206 **1 Claim**



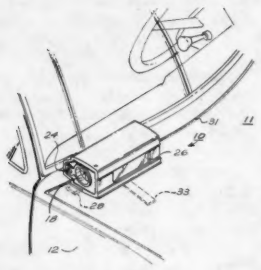
1. Apparatus for use on the shoulder region of a person wearing a neck encircling garment, said apparatus comprising a holster. a strap on said holster forming a loop thereon for encircling said shoulder region, and means on said loop for engaging said garment, said means being relatively short compared with the size of said loop and extending between said neck and shoulder region, said means being an openable loop including locking means, said openable loop including two generally rigid end portions, one of said portions being provided with holes, the other of said portions including projections adapted for a snap fit into said holes, said openable loop including a textile strip connecting said end portions, said end portions being of relatively rigid material, one of said end portions being connected to the textile strip in extension of the same and the other of said end portions being connected to the textile strip to extend back along the same.

4,260,090

DOCUMENT HOLDER

James R. Gross, 1080 Independence Dr., Bartlett, Ill. 60103

Filed May 14, 1979, Ser. No. 38,747
Int. Cl.[3] G07B *15/00*; B65D *91/00*; A47G *29/00*
U.S. Cl. 224—277 **10 Claims**



1. In a holder having a hollow housing for receiving and confining a document therein and adapted to be attached fixedly to an edge portion of an upper surface of a vehicle, the surface having an inside wall associated therewith, the combination comprising:

said housing being hollow and elongated in shape and being only slightly larger in size than a small number of similar rolled-up or folded-over documents;

means defining a small opening in said housing to permit a rolled-up or folded-over document to be inserted through said opening and into the interior of said housing away from said small opening so that the document cannot be readily withdrawn from said opening to trap the document therein;

an access door swingably mounted over a larger opening in said housing for permitting access to the interior of said housing to facilitate the removal of the document therefrom;

locking means for maintaining said door in its closed position;

mounting means connected to said housing for attaching said housing to the edge portion of the surface on the vehicle, said mounting means having a fixedly connected strip extending therefrom under the inside wall; and

fastening means for fixing said strip to the inside wall only to secure said housing to the vehicle.

4,260,091

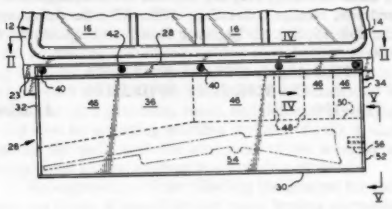
FLEXIBLE TRUCK STORAGE ACCESSORY AND GUN CARRIER

Harry C. French; John R. Lapinski, and John J. MacCready, all of Jackson, Mich., assignors to J. H. J. Company, Ltd., Jackson, Mich.

Filed Mar. 24, 1980, Ser. No. 133,519
Int. Cl.[3] B65D *33/14*
U.S. Cl. 224—311 **5 Claims**

1. A vehicle storage and gun carrier comprising, in combination, a flexible panel having an upper edge, a lower edge, and first and second ends, a plurality of vertical pockets defined on said panel each having an opening disposed toward said upper edge, a horizontally disposed gun receiving pocket defined on said panel adjacent said lower edge, an access opening defined in said gun pocket adjacent said first end, and panel mounting means defined on said panel adjacent said upper edge whereby

said panel is suspended from said mounting means and the panel region defining said gun receiving pocket may be flexed



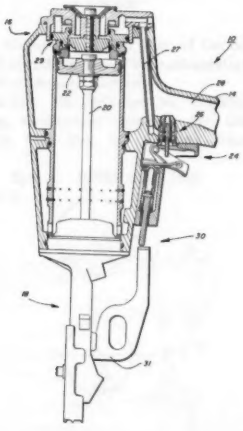
relative to said upper edge to facilitate access to said access opening.

4,260,092

SAFETY ASSEMBLY FOR A TOOL FOR DRIVING FASTENERS

Ronald Austin, Hazelcrest, Ill., assignor to Duo-Fast Corporation, Franklin Park, Ill.

Filed Jul. 2, 1979, Ser. No. 53,956
Int. Cl.³ B25C *1/04*
U.S. Cl. 227—8 **18 Claims**



1. In a fastener driving tool of the type including a driver for driving fasteners into a workpiece and means for actuating said driver, the improvement comprising:

a trigger assembly for operating said actuating means, said trigger assembly including a trigger member pivotally mounted on said tool, a trip lever pivotally mounted on said trigger member, and

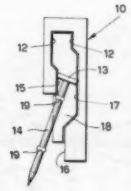
a safety assembly for actuating said trigger assembly into an operative position, said safety assembly including a push rod assembly slideably mounted in said tool, said push rod assembly including a push rod with a first end and a second end, said second end adapted to engage said workpiece upon placement of said tool on said workpiece, said first end including means for engaging said lever and preventing pivoting thereof when said trigger member is actuated and said tool is placed on said workpiece.

4,260,093

NAIL-GUIDING MEMBER FOR A NAIL-DRIVING MACHINE

Umberto Monacelli, Via Parini 6, Monza (Milan), Italy

Filed Jun. 20, 1979, Ser. No. 50,205
Claims priority, application Italy, Jun. 21, 1978, 22155/78[U]
Int. Cl.³ B25L *3/00*
U.S. Cl. 227—120 **3 Claims**



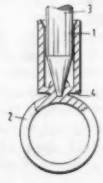
1. A guide for receiving in orderly row members to be rammed, said members having a shank and a widened head such as nails, comprising a seat with generically U-shaped section, a base adapted to guide the heads of the nails, a first longitudinal surface projecting from one of the branches of the U-shape to rest on the shank of the nails, a second longitudinal surface resting on the shank of the nails and projecting from the other one of the branches of the U-shape, at a greater distance from the base than the distance of the first surface from the base, the distance between the first surface and the surface of the other branch opposite the first surface being greater than the diametral dimension of the head of the nails.

4,260,094

METHOD OF INTERCONNECTING SEVERAL PARTS, SUCH AS A PIECE OF TUBING AND A PLATE, A TUBE OR SIMILAR BODY

Christiaan A. Stroo, Mezenlaan, Netherlands, assignor to Technisch Handels-en Adviesbureau van Geffen B.V., Apeldoorn, Netherlands

Filed May 30, 1979, Ser. No. 43,648
Claims priority, application Netherlands, Jun. 6, 1978, 7806161
Int. Cl.³ B23K *19/02*
U.S. Cl. 228—112 **3 Claims**



1. The method of making a branch pipe connection to a vessel such as a tube, which comprises the steps of:

(a) providing a branch pipe blank having a side wall defining a bore and a transverse bottom wall at one end;

(b) positioning said blank such that its bottom wall engages a wall of the vessel;

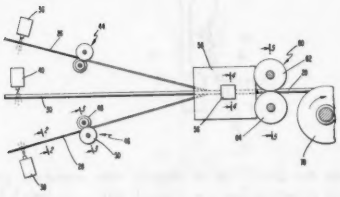
(c) inserting a rapidly rotating, non-cutting piercing tool axially into said blank and penetrating said bottom wall and said wall of the vessel therewith to pierce said bottom wall and said wall of the vessel while welding the blank to the vessel.

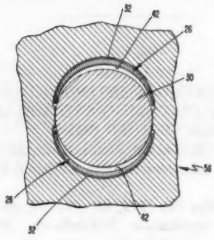
4,260,095

METHOD OF MANUFACTURING A CLAD PRODUCT

Phillip H. Smith, 102 Haverford Rd., Pittsburgh, Pa. 15238

Filed Aug. 18, 1978, Ser. No. 934,967
Int. Cl.[3] B23K *31/00*
U.S. Cl. 228—130 22 Claims





1. A method of manufacturing a clad product of predetermined dimensions having a core member of uniform cross section and a cladding solid-phase bonded thereon comprised of a material dissimilar from that of the core member, the cladding being of uniform thickness and concentricity with respect to the core member, comprising the steps of:

(a) preforming the core member and the cladding in dimensions substantially the same as the predetermined dimensions of the clad product, with at least the core member or the cladding being preformed with an additional dimensional profile for compensating for dimensional distortion occurring from non-uniform material flow in the respective core member or cladding during solid-phase bonding;

(b) heating the core member and the cladding to a solid-phase bonding temperature; and

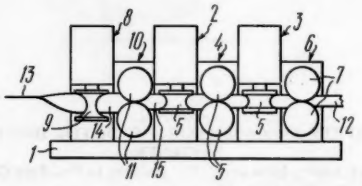
(c) passing the core member and the cladding together through pressure rollers with application of a pressure for solid-phase bonding the cladding against the core member to form the clad product, wherein the bonding pressure deforms the preformed profile to compensate for the dimensional distortion occurring from non-uniform material flow in the respective core member or cladding during solid-phase bonding for obtaining the predetermined product dimensions and uniform thickness and concentricity of the cladding.

4,260,096

METHOD FOR REDUCTION AND SIZING OF WELDED PIPES AND MILL FOR EFFECTING SAME

Jury V. Samarynov, prospekt Lenina, 61, kv. 14; Jury A. Mednikov, ulitsa Svobody, 145, kv. 19, both of Chelyabinsk, and Alexandr S. Rozen, Gorodok ITR Metallurgicheskogo Zavoda, dom 19, kv. 11, Taganrog Rostovskoi oblasti, all of U.S.S.R.

Filed Aug. 9, 1978, Ser. No. 933,115
Int. Cl.[3] B23K *31/06;* B21D *5/12*
U.S. Cl. 228—158 2 Claims



1. An improved process for the reduction and sizing of welded round pipes, wherein a pipe is reduced in the diameter

in passes through rolls having alternating horizontal and vertical stands along a mill path, each horizontal stand having a pair of opposed reducing rolls disposed with their axes vertically oriented and each vertical stand having a pair of opposed reducing rolls disposed with their axes horizontally oriented the improvement comprising: advancing said pipe through a roll welding pass thereby welding sheet material into a round pipe, advancing said round welded pipe through said alternating horizontal and vertical stands whereby the stands are arranged with the axes of the rolls in each stand oriented 90° with respect to each preceding stand, and deforming said pipe at its weld zone by engaging working surfaces of rolls in each stand against the weld with the curvature of the working surfaces being equal to one another in a plurality of stands.

2. An improved mill for effecting the process for the reduction and sizing of round welded pipes, having alternating horizontal and vertical stands arranged along a mill path with each stand having opposed reducing rolls and the stands arranged with the axes of the rolls in each stand oriented 90° with respect to the preceding stand and with the rolls in each stand having respective working surfaces for engaging the pipe weld and being defined by conjugate arcs of at least two radii, the improvement comprising: a roll welding pass for welding a strip into a round pipe and disposed along the mill path and having a roll welding radius, said reducing rolls having at least one of said arcs defined by a radius which is equal to the radius of roll welding pass of said rolls; and the apices of said arcs of an equal radius, being in the same plane extending through the longitudinal axis of the mill along the line of motion of the weld and the curvature formed by the conjugate arcs in the working surfaces of each stand being equal to one another in a plurality of stands.

4,260,097

CONTAINER

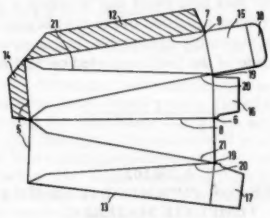
Richard P. Nold, Gross-Gerau, Fed. Rep. of Germany, assignor to Real-Pack Entwicklungs-und Verpackungstechnik GmbH, Gross-Gerau, Fed. Rep. of Germany

Filed Mar. 18, 1980, Ser. No. 131,361

Claims priority, application European Pat. Off., Mar. 24, 1979, 79100899.8; Fed. Rep. of Germany, Mar. 30, 1979, 2912737

Int. Cl.[3] **B65D** *5/36, 5/00*

U.S. Cl. 229—16 R **15 Claims**



1. Container made from an integral blank of of pulpboard, cardboard, synthetic plastic or the like, comprising an elongate main body forming the side walls of the container and formed from the blank by connecting two opposite longitudinal flaps of the blank, a quadrangular end wall at one container end from which the side walls converge towards a narrow container closure at the opposite container end, one main folding line each extending from each of two diametrically opposite corners of the end wall rectilinearly towards a point of intersection at the narrow container closure, while minor foldlines proceed from the two other diametrically opposed corners of the end wall, and further fold lines extending from each of the minor fold lines at an angle to the minor fold lines and extending to the points of intersection of the main fold lines with the narrow container closure.

4,260,098

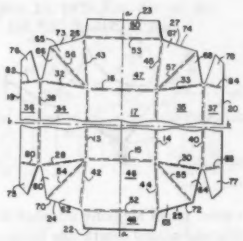
TRAY CONTAINER WITH REINFORCED SIDEWALLS

Guelfo A. Manizza, Blauvelt, N.Y., and Douglas L. Neale, Libertyville, Ill., assignors to Federal Paper Board Company, Inc., Montvale, N.J.

Filed May 7, 1979, Ser. No. 36,326

Int. Cl.[3] **B65D** *5/36*

U.S. Cl. 229—31 R **6 Claims**



1. A container in the form of a film coated paperboard tray (10) having a bottom wall forming panel (17), integral wall forming panels (34, 35, 46, 47) disposed in upstanding and paired relation about the periphery of the bottom wall forming panel (17) and integral corner connecting web panels (24, 25, 26, 27) in paired relation (60, 62; 63, 64; 65, 66; 67, 68) at each corner, each pair of said corner connecting web panels being folded upon a median line (54, 55, 56, 57) and disposed in overlying relation on the end portion of the outside face of the one adjoining upstanding wall forming panel (34, 35) at the respective corner, so as to render the corner leak proof for at least a major portion of the depth of the tray, as measured from the bottom wall forming panel (17), said upstanding wall forming panels (34, 35 46, 47) each having a relatively narrow integral edge reinforcing panel portion in the form of a narrow strip (36, 37 , 48, 50) folded down from the top edge forming score line (38, 40, 52, 53) thereof and adhesively secured along the top margin of the outside face of said upstanding wall panel, each pair of triangular corner web panels having associated therewith a corner connecting tab (75, 76, 77, 78) which is positioned along the top margin of the outside face of the upstanding wall panel against which pairs of folded triangular web panels are disposed in overlying and paired relation and at opposite ends thereof, and each said corner connecting tab (75, 76, 77, 78) underlying an end portion of the integral edge reinforcing panel portion (48, 50) which is folded down from the top edge (52, 53) of said upstanding wall panel (46, 47) against which the triangular corner web panels are folded, and said edge reinforcing panel portion (48, 50) being secured in heat sealed relation at its opposite end margins to said corner connecting tab members (75, 76, 77, 78) which underlie the same.

4,260,099

EXPANDABLE PAPERBOARD CUP AND BLANK THEREFOR

Duane Mode, Minneapolis, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Nov. 6, 1979, Ser. No. 91,822

Int. Cl.[3] **B65D** *5/24, 5/22*

U.S. Cl. 229—31 R **20 Claims**

1. A unitary paperboard blank adapted to form a container comprising:

a rectangular main panel having first, second, third and fourth corners;

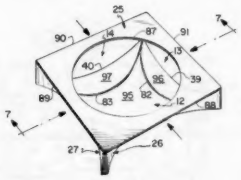
first, second, third and fourth side panels hingedly coupled, respectively, to a side of said main panel along first, second, third and fourth fold lines;

a first corner panel hingedly coupled along two fold lines to

an end of said first side panel and an end of said second side panel;

a second corner panel hingedly coupled along two fold lines to another end of said second side panel and an end of said third side panel;

a third corner panel hingedly coupled along two fold lines to another end of said third side panel and an end of said fourth side panel;



a fourth corner panel hingedly coupled along two fold lines to another end of said fourth side panel and another end of said first side panel;

each of said corner panels having a diagonal fold line therein intersecting one of said corners of said main panel and extending inwardly into said main panel; and

said main panel having four inner fold lines, each interconnecting two adjacent diagonal fold lines.

4,260,100

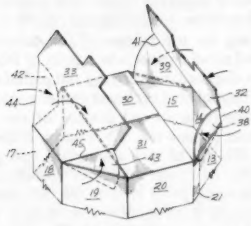
CONTAINER CLOSURE

Ronald W. Hoffman, Manitowoc, Wis., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Dec. 6, 1979, Ser. No. 100,758

Int. Cl.³ B65D *5/10*

U.S. Cl. 229—39 R **4 Claims**



1. A closure for a container comprising

a pair of closure panels hingedly connected to opposing first side walls, each of said closure panels having first side edges alignable with the upper edge of second side walls adjacent said first side wall, and

second side edges alignable with third side walls adjacent said second side walls,

tuck-in flaps hingedly connected to said closure panels by score lines along said first side edges, said tuck-in flaps having a radial outer edge, the radius of said tuck-in flap being less than that width of a side wall, the edge of said tuck-in flap opposite said score line being defined by a slit between said tuck-in flap and said second side walls,

said closure panels overlapping in said closed container, one of said closure panels having a notch in its outer edge alignable with a tongue in the outer edge of the other of said closure panels.

4,260,101

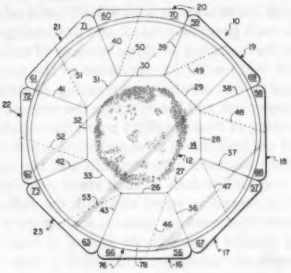
EXPANDABLE CONTAINER AND BLANK THEREFOR

George P. Webinger, Minneapolis, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Jun. 4, 1979, Ser. No. 44,942

Int. Cl.³ B65D *85/70*

U.S. Cl. 229—41 C **7 Claims**



1. An expandable container formed from a unitary paperboard blank without an adhesive seam for enclosing popcorn to be cooked in a microwave oven, the combination comprising:

a polygonal paperboard base panel adapted to support the popcorn thereon; and

self-locking, expandable means, hingedly extending along fold lines from the sides of said base panel, for enclosing a volume above said base panel,

said self-locking, expandable means including a plurality of paperboard fins, one hingedly connected by means of a common fold line with each side of said polygonal base panel, each of said fins also being hingedly coupled to the two adjacent fins on opposed sides thereof along fold lines, and each of said fins having an interior fold line therein,

said fins in a closed position enclosing the volume by being folded into a position overlying said base panel by folding said fins inwardly over said base panel so that all of said interior fold lines intersect substantially at one point spaced above said base panel and in which a portion of each fin overlying a portion of the next adjacent fin,

said fins being outwardly expandable into an open position upon expansion of the food supported on said base panel.

4,260,102

APPARATUS FOR PUNCHING SYMBOLS INTO TEMPLATE MATERIAL

Georg Thoma, Sauerlach, Fed. Rep. of Germany, assignor to Sanried Fr. Sander & Riedmaier GmbH & Co., Wuppertal, Fed. Rep. of Germany

Filed Jul. 5, 1979, Ser. No. 54,930

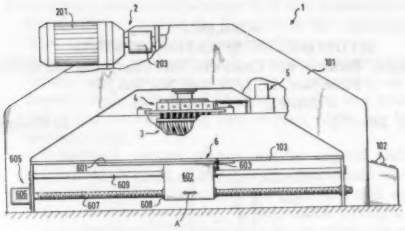
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1978, 2830315; May 29, 1979, 2921843

Int. Cl.³ G06K *1/10*

U.S. Cl. 234—112 **14 Claims**

1. In an apparatus for punching of symbols into template material with a punching tool, in which the punching tool has punching pins, which are pressed through the template material by an operating mechanism after selection by selector means in a grid arrangement which is characteristic for each symbol, the improvement comprised in that for punching of symbols in different sizes of lettering and/or types of lettering, the punching tool includes several parallel rows of said punch-

ing pins of different punch size, the selector means being arranged for selecting and operating the punching pins of only



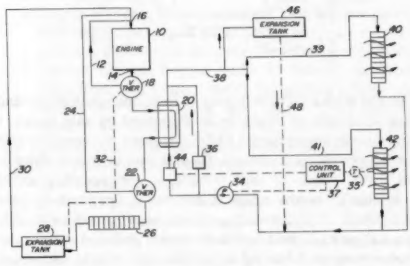
one punch row in any desired combination for punching of symbols according to a straight-line dot grid.

4,260,103

HEATING SYSTEM FOR A RAILWAY CAR FOR UTILIZING WASTE HEAT FROM AN ENGINE

James M. Herring, Jr., Merion Station, Pa., assignor to The Budd Company, Troy, Mich.

Filed Jan. 17, 1979, Ser. No. 4,072
Int. Cl.³ B60H *1/00*
U.S. Cl. 237—5 **3 Claims**



1. In combination with an engine which generates heat and a liquid circulating loop including a heat exchanger to provide cooling for said engine,

a heating system for providing heat for a compartment, comprising:

(a) heating elements in said compartment to generate heat in response to hot liquid passing therethrough,

(b) a pump for circulating liquid through said heating elements through a first and second parallel path,

(c) said heat exchanger being connected in said first parallel path so that liquid circulated therethrough by said pump through said heating elements will receive heat, from said heat exchanger

(d) said second path by-passing said heat exchanger, and

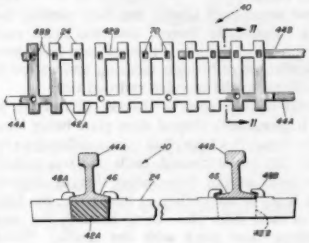
(e) switching means including temperature responsive means to selectively switch the liquid from said pump to one of said first and second paths, said switching means further including a first valve positioned in said first parallel path between said pump and said heat exchanger, and said switching means being responsive to a predetermined temperature in said compartment for permitting liquid to flow through said first valve, a second valve positioned in said second parallel path, adjacent said pump and by-passing said heat exchanger and being biased to normally closed position and responsive to liquid pressure for permitting liquid to flow therethrough whenever the temperature in said compartment exceeds a predetermined temperature, said first valve will close and such restricted flow of liquid causing the pressure in said first and second paths to increase thereby causing said second valve to open and permit the liquid to flow through said second path and by-pass said heat exchanger.

4,260,104

CURVABLE TRACK FOR MODEL RAILROADS

Stephan J. Schaffan, Hillside, N.J., assignor to Atlas Tool Company, Hillside, N.J.

Filed Jun. 13, 1979, Ser. No. 48,242
Int. Cl.³ A63H *19/30*
U.S. Cl. 238—10 E **10 Claims**



1. Curvable track for model railroad use comprising:

a plurality of simulated crossties;

means flexibly interconnecting said crossties to form a unitary flexible bed of crossties;

a first rail extending transversely to said crossties of said bed and secured to said bed against lateral and longitudinal movement with respect to said bed;

a second rail, said second rail being spaced laterally from and extending parallel to said first rail; and

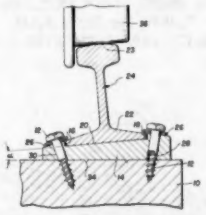
means securing said second rail to said crosstie bed against lateral movement with respect to said bed, said second rail being free to move longitudinally with respect to said bed.

4,260,105

RAILROAD TIE PLATE AND CORRECTABLE SHIM

Albert A. Phillips, Rte. 1, Box 56A, Byars, Okla. 74831

Filed Mar. 4, 1980, Ser. No. 127,995
Int. Cl.³ E01B *9/44, 9/10*
U.S. Cl. 238—303 **2 Claims**



1. An article of manufacture for securing a train rail to a series of wooden ties, wherein the rail has an upper flange for the passage thereover of train wheels and a lower flange for securing of the rail to the railroad ties, comprising:

a plurality of rail supporting base plates, each said base plate being disposed over a railroad tie and each having a length approximately the width of the railroad tie upon which it is disposed, each said base plate having a bottom wall, at least one upper wall, and a sloped rectangular groove disposed in the upper wall and defined by a pair of groove sides and a groove bottom, said sloped rectangular groove

extending the length of said base plate and having a width which exceeds the width of the lower flange of the rail so that the rail rests in said sloped groove upon said base plate with gaps between the sides of the lower rail flange and the sides of the rectangular groove, the sloped rectangular groove having a depth which exceeds the height of the lower flange of the rail adjacent the sides of the groove;

each said rail supporting base plate being thicker beneath one side of the rectangular groove than beneath the other side of the rectangular groove to provide the slope of said groove, said base plates being placed on the railroad ties such that the outside of each base plate is higher than the inside thereof;

said base plates each having one hole passing therethrough along the outside thereof and two holes passing therethrough along the inside thereof, said holes being adapted to receive therethrough securing screws for holding the base plates to the wooden railroad ties;

a plurality of trapezoidally shaped shim plates, at least one said trapezoidally shaped shim plate being located immediately beneath a base plate over a railroad tie in a location where the rail is curved, each said trapezoidally shaped shim plate having three holes therein aligned with the three holes of the overlying base plate, the highest elevation of each shim plate being beneath the outside of the overlying base plate with the smaller elevation being beneath the inside of said base plate;

securing screws passing through the holes in said base plates and said trapezoidally shaped shim plates and for engaging with the underlying railroad ties, said screws being elongated and being disposed at a towed-in angle with the heads of said screws spaced from said base plates; and

means to permit the rail to move slightly both horizontally and vertically when a train passes thereover comprising a washer disposed between the head of each said screw and said base plate to extend over the top of the bottom flange of the rail thereby leaving a gap between the bottom of said washer and the top of the lower flange of the rail, said washer being freely movable between said screw head and said base plate, whereby said washer will turn while said screw remains firmly fixed during longitudinal movement of said rail, said means to permit the rail to move also comprising said gaps between the sides of said groove and the sides of the lower rail flange.

4,260,106

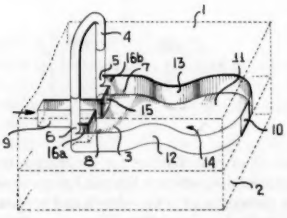
FLUIDIC OSCILLATOR WITH RESONANT INERTANCE AND DYNAMIC COMPLIANCE CIRCUIT

Peter Bauer, 13921 Esworthy Rd., Germantown, Md. 20767

Division of Ser. No. 19,250, Mar. 9, 1979. This application Mar. 7, 1980, Ser. No. 128,137

Int. Cl.[3] F15B *21/12*; F15C *1/08*

U.S. Cl. 239—11 **5 Claims**



1. A method of controlling spray pattern configuration in a fluid spray issued from a spray nozzle of the fluidic oscillator type which includes an inlet passage for receiving pressurized fluid to be sprayed, a chamber for receiving a jet of said fluid passed by said inlet passage, means for oscillatorily deflecting said jet, and an outlet opening for issuing said oscillatorily deflected jet to ambient as said fluid spray, said method comprising the step of varying the static pressure in chamber, independently of said means for oscillatorily deflecting.

4,260,107

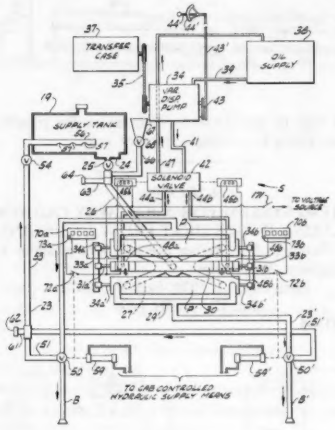
HYDROSTATIC SPRAYING SYSTEM

Clarence L. Jackson, 819 Caseyville Rd., Caseyville, Ill. 62232

Filed Nov. 27, 1978, Ser. No. 963,783

Int. Cl.[3] B05B *9/06*, *1/16*

U.S. Cl. 239—74 **31 Claims**



1. For use with a vehicle having at least one spray boom and a source of supply of liquid to be dispensed by said boom, a spraying system comprising a hydraulic pump powered by said vehicle for providing hydraulic fluid at rate corresponding to ground travel speed of said vehicle, a reciprocating-stroke linear hydraulic motor adapted for being operated by said hydraulic fluid, a reciprocating-stroke linear pump of double acting configuration, said hydraulic motor and said reciprocating-stroke pump each having a cylinder and a piston reciprocal in said cylinder, means interconnecting each piston for reciprocal actuation of the piston of said reciprocating-stroke pump in response to reciprocation of the piston of said hydraulic motor, means for alternately supplying hydraulic fluid from said hydraulic pump to the opposite ends of the cylinder of said hydraulic motor for causing reciprocation of the piston of said hydraulic motor, said reciprocating-stroke pump having a suction inlet for receiving said liquid from said source and an outlet for delivering a precisely metered amount of said liquid upon each stroke of reciprocating-stroke pump, and means for interconnecting said reciprocating-stroke pump outlet with said boom, whereby precisely metered amounts of said liquid are dispensed by said boom upon each stroke of said reciprocating-stroke pump as a function of the ground travel speed of said vehicle.

4,260,108

METHOD AND APPARATUS FOR AIRBORNE RELEASE OF INSECT EGGS

Malcolm A. Maedgen, Jr., Mathis, Tex., assignor to Biogenesis, Inc., Mathis, Tex.

Filed Aug. 23, 1978, Ser. No. 935,923

Int. Cl.[3] B64D *1/18*

U.S. Cl. 239—171 **19 Claims**

1. Apparatus for airborne release of loose dry live insect eggs from a moving vehicle, comprising

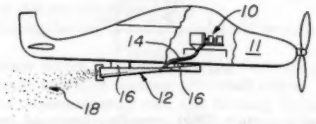
a hopper mounted within the vehicle for receiving and holding a limited quantity of the loose eggs in a loose dry

condition without crushing the live eggs, the hopper having an inlet opening at the top and downwardly and inwardly slanted sides that terminate in an outlet for discharging the eggs,

flow control means cooperating with said hopper outlet for selectively controlling the flow rate of the eggs dispensed from said hopper through said outlet,

an elongated air intake manifold mounted externally of said vehicle and having an open end for receiving air flow therethrough, said manifold sides tapering to a restricted outlet end for increasing the velocity of the air leaving said manifold,

a cylindrical venturi section axially aligned with said manifold, one end of which is attached to said restricted outlet end of said manifold for receiving said air flow from said manifold, said venturi section having a radial opening disposed therein, the velocity of the air passing through said venturi section from said manifold lowering the air pressure at said radial opening below atmospheric pressure,



a length of tubing interconnecting said hopper outlet and said radial opening of said venturi section for creating a pressure differential between the interior of said venturi section and said hopper outlet for forcing the loose dry eggs from said hopper outlet through said flow control means and said tubing into said venturi section for mixing the loose dry eggs in said air flow therein, said pressure differential acting substantially solely as the force for moving the loose dry eggs from said hopper to said venturi section,

a generally triangular flattened duct having an open side forming an elongated exhaust slot and a restricted inlet end co-axially aligned with and attached to the exhaust end of said venturi section for receiving said loose eggs carried in said air stream from said venturi section, and

a plurality of vertically-oriented spaced deformable deflector tabs fixed to the open outlet end of said exhaust slot for transversely deflecting said loose egg-laden air stream from said outlet slot for broadcasting the loose insect eggs in a desired pattern.

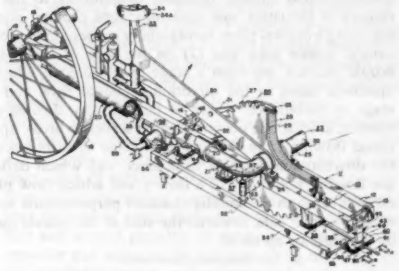
4,260,109

REEL TRANSPORT ALIGNMENT SYSTEM

Burr Courtright, La Grande, Oreg., assignor to CH_2O, Inc., La Grande, Oreg.

Filed Feb. 5, 1979, Ser. No. 9,143
Int. Cl.³ B05B *3/00*
U.S. Cl. 239—189 **11 Claims**

1. A unit for coaction with irrigation equipment for variably accelerating and decelerating a portion thereof so as to keep the irrigation equipment regularly operating, said unit including, in combination: support structure having ground-support means; a capstan carried by said ground structure; a flexible elongate connector wound upon said capstan and constructed for anchored extension therefrom at a remote point; means for revolvably driving said capstan; and control means coupled to said revolvably driving means, cooperating with and movably engaging said flexible elongate connector, and responsive to deviation between support structure travel orientation and flexible elongate connector orientation, for controlling said revolvably driving means to thereby reduce such deviation, said revolvably driving means comprising hydraulic jack means operatively coupled to said capstan, said control means comprising valve means provided said hydraulic jack means for controlling flow therethrough, and linkage receiving said flexible elongate connector and coupled to said valve means, and wherein and support structure has a vertically pivoted



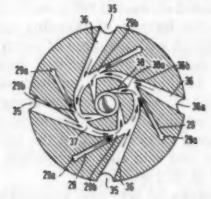
horizontally swinging arm having end connection means engaging said flexible elongate connector at at least one point spaced from said capstan, said linkage including said swinging arm, said valve means having a valve control element coupled to said swinging arm.

4,260,110

SPRAY NOZZLE, DEVICES CONTAINING THE SAME AND APPARATUS FOR MAKING SUCH DEVICES

Winfried Werding, Grand-Rue 10, Pully, Switzerland (CH 1009)

Filed May 26, 1978, Ser. No. 909,995
Claims priority, application Switzerland, Aug. 2, 1977, 9607/77; Canada, Oct. 14, 1977, 288724; Switzerland, Feb. 24, 1978, 2024/77
Int. Cl.³ B05B *1/34, 7/10*
U.S. Cl. 239—404 **29 Claims**



1. A spray nozzle for dispensing a liquid, which is subject to an elevated pressure, in form of a spray, comprising (A) a housing having a central nozzle outlet and a central nozzle axis therethrough, and an inlet opening for the nozzle outlet on the inside of the housing, (B) a hollow nozzle interior which is surrounded by a side wall and through which liquid flows towards the nozzle outlet, which interior comprises

(a) a discharge chamber located upstream of the nozzle outlet on the inside and arranged coaxially with, and along a central plane perpendicular to, the central nozzle axis,

(b) an annular chamber arranged coaxially to the discharge chamber, along a central plane perpendicular to the central nozzle axis,

(c) at least two feed channels which extend from the annular chamber to the discharge chamber, in a plane intersecting the central nozzle axis and open at least approximately tangentially to the periphery of the discharge chamber, each feed channel having an inlet opening and an exit, the feed channels and the annular chamber forming a first stage of turbulence, and

(d) at least one supply duct for feeding liquid to the first stage of turbulence and a supply line for the liquid to which said supply duct is connected,

wherein the hollow interior of the nozzle further comprises

(1) at least one additional stage of turbulence arranged coaxially to the discharge chamber, an outermost such additional stage comprising at least one outermost feed channel leading from said supply line to the annular chamber next-following downstream and opening into the last-mentioned annular chamber tangentially to the periphery of the latter, said outermost feed channel extending along a central plane substantially perpendicular to the central nozzle axis, and (2) on the side of the hollow nozzle interior, between a stage of turbulence which is upstream taken in the direction of liquid flow and the stage of turbulence which is immediately downstream thereof, at least one obstacle which serves to break up the liquid flowing from the upstream stage of turbulence to the downstream stage of turbulence and which deflects the flowing liquid out of a flow plane which flow plane extends through the annular chamber perpendicular to the central nozzle axis, towards the side of the nozzle outlet by an angle of up to 90°.

4,260,111

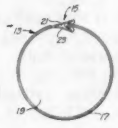
DRIP IRRIGATION CONDUIT

S. W. O. Menzel, San Diego, Calif., assignor to Reed Irrigation Systems, El Cajon, Calif.

Filed Oct. 11, 1977, Ser. No. 840,983

Int. Cl.³ A01G *25/02*

U.S. Cl. 239—450 **15 Claims**



1. A drip irrigation conduit comprising:

first and second elongated tubes, each of said tubes having an interior, the interior of said first tube being adapted to communicate with a source of water under pressure;

said tubes including an elongated section of flexible sheet material having a first longitudinal edge portion and spaced leg segments extending along the other longitudinal edge portion of said sections to define a socket;

said elongated section defining the outer periphery of said first tube and said first longitudinal edge portion being received in said socket;

engaging means on said first longitudinal edge portion and on at least one of said leg segments for retaining said first longitudinal edge portion in said socket;

said leg segments at least partially defining said second tube;

transfer passage means leading from the interior of said first tube to the interior of said second tube; and

discharge passage means leading from the interior of said second tube to the exterior of said section of flexible sheet material.

4,260,112

SPRINGLESS FUEL INJECTION NOZZLE

William A. Grgurich, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

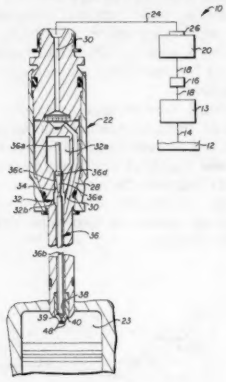
PCT No. PCT/US80/00122, § 371 Date Feb. 4, 1980, § 102(e) Date Feb. 4, 1980

This PCT application filed Feb. 4, 1980, Ser. No. 134,619

Int. Cl.³ B05B *1/30*

U.S. Cl. 239—533.8 **7 Claims**

1. In a fuel injection nozzle (**22**) of the type including a housing (**28**) having a fluid cavity (**32**) having an upper cavity portion (**32*a***) fluidly connected to a lower cavity portion (**32*b***), said housing (**28**) having a valve guide (**34**) formed between said upper and lower cavity portions (**32*a*,32*b***), said housing (**28**) having means (**30**) for supplying pressurized fluid to said cavity portions (**32*a*,32*b***) of said cavity (**32**), said means (**30**) connected to said cavity (**32**) only at said lower cavity portion (**32*b***), said housing (**28**) having fluid outlet orifices (**48**) only at said lower cavity portion (**32*b***), said housing (**28**) having a reciprocable valve (**36**), said valve having an upper valve portion (**36*a***) extending into said upper cavity portion (**32*a***), a



lower valve portion (**36*b***) extending into said lower cavity portion (**32*b***) and an intermediate valve portion (**36**c) within said guide (**34**), an improvement comprising:

said intermediate valve portion (**36**c) forming a variable clearance with said guide (**34**); and

said nozzle (**22**) being free of any resilient member acting on said valve (**36**).

4,260,113

PROCESS AND APPARATUS FOR THE PRODUCTION OF CONSTITUENTS OF PARTICLE BOARD PANELS

Gerhard Maier; Udo Rosenke, both of Bielefeld, and Manfred Humbert, Gütersloh; Walter Ritter, Hiddenhausen, all of Fed. Rep. of Germany, assignors to Maschinenfabrik B. Maier KG, Bielefeld, Fed. Rep. of Germany

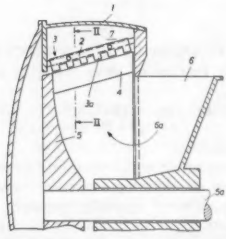
Continuation of Ser. No. 827,591, Aug. 25, 1977, abandoned.

This application Nov. 13, 1978, Ser. No. 959,916

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1976, 2639123

Int. Cl.³ B02C *18/18*

U.S. Cl. 241—28 **6 Claims**

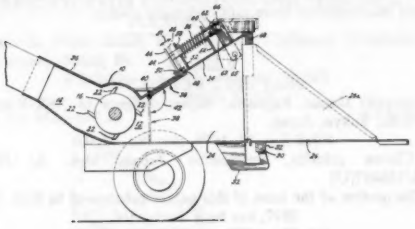


1. A process for making shavings of predetermined length for use in the manufacture of particle board panels or the like from chips made of wood and having a length, as considered in the direction of grain, which is at least twice said predetermined length, comprising the steps of breaking up said chips into first shavings having a length exceeding said predetermined length; and simultaneously subdividing said first shavings into shorter shavings of said predetermined length.

4,260,114
SAFETY DEVICE FOR BRUSH CHIPPER

Robert R. Herder, Bryn Athyn, Pa., assignor to Asplundh Tree Expert Company, Willow Grove, Pa.

Filed Oct. 12, 1979, Ser. No. 84,045
Int. Cl.[3] B02C *25/00*
U.S. Cl. 241—37.5 15 Claims



1. A brush chipper comprising:

a cutter housing having an inlet opening and an outlet opening;

cutting means within said cutter housing for cutting brush, fed through said inlet opening, into small chips;

feed means communicating with said housing through said inlet opening for supplying brush to said cutting means, said feed means including a feed table over which brush is supplied and movable between a normal position at which a normal load of brush has been deposited on said table and an emergency position downward from said normal position at which a weight in excess of a normal load of brush has been deposited on said table;

discharge means communicating with said housing through said outlet opening for carrying away chips from said cutting means;

guard means movably mounted forward of said cutting means for obstructing the supply of brush to said cutting means during an emergency condition, said guard means movable between a normal position at which said guard means do not obstruct said supply of brush to said cutting means and an emergency position within the path of movement of said brush to said cutting means to obstruct said supply of brush to said cutting means; and,

control means coupled between said guard means and said feed means for holding said guard means in said normal position of said guard means and, upon downward movement of said feed table to said emergency position of said feed table, for releasing said guard means to permit said guard means to move to said emergency position of said guard means.

4,260,115
DOCUMENT SHREDDER

Takefumi Hatanaka, Matsudo, Japan, assignor to Lifewell Corporation, Tokyo, Japan

Filed Nov. 17, 1978, Ser. No. 961,676
Claims priority, application Japan, Nov. 11, 1978, 53/124088
Int. Cl.[3] B02C *18/22, 18/44*
U.S. Cl. 241—236 3 Claims

1. A document shredder for cutting sheets of documents into small fragments, comprising:

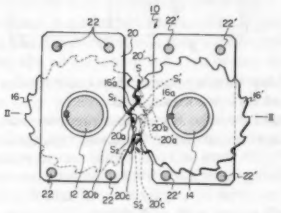
first and second parallel shafts mounted for rotation in opposite directions;

a first plurality of discs fixed on said first shaft for rotation with said first shaft and spaced at intervals along the length of said first shaft, each of said discs having a plurality of shredding blades peripherally mounted thereon and spaced circumferentially thereof;

a second plurality of discs fixed on said second shaft for rotation with said second shaft and spaced at intervals along the length of said second shaft, each of said discs having a plurality of shredding blades peripherally mounted thereon and spaced circumferentially thereof;

adjacent discs of said first plurality of discs defining spaces therebetween, adjacent discs of said second plurality of discs defining spaces therebetween, and said first and second parallel shafts relatively positioned with respective discs of said first plurality of discs inserted between adjacent discs of said second plurality of discs and with respective discs of said second plurality of discs inserted between adjacent discs of said first plurality of discs;

a plurality of stationary spacers each mounted between a respective adjacent pair of discs in one plurality of discs and opposite a corresponding disc in the other plurality of discs, each of said spacers having a thickness slightly less than its corresponding disc and having a peripheral contour defining a guide surface leading down toward said first and second plurality of discs and an arcuate surface opposite and adjacent the corresponding disc and extending upwardly toward and meeting said guide surface at a certain angle, said guide surface and said arcuate surface meeting at an edge defining a cutting edge on said spacer, and said cutting edge of said spacer being positioned close



to the circular locus of the outermost portions of said shredding blades;

whereby rotation of said first and second parallel shafts in opposite directions and in directions so that said shredding blades first approach said cutting edges and then sweep past said arcuate surfaces of said spacers is effective to shred documents inserted between said first plurality and said second plurality of rotating discs, wherein each such document is first cut into a plurality of strips by a shearing action between said first plurality of rotating discs and said second plurality of rotating discs, said strips being formed between adjacent pairs of said first plurality of rotating discs and between adjacent pairs of said second plurality of rotating discs, and each of said strips then being guided by the guide surface of a corresponding spacer to advance between the cutting edge of the corresponding spacer and the shredding blades of the rotating disc opposite the corresponding spacer, and successive fragments being successively cut from each advancing strip as successive shredding blades sweep past the cutting edges and the arcuate surfaces as the corresponding discs rotate.

4,260,116
UNWINDING STAND FOR LEVEL WIND RECLOSABLE STOCK POUCH MATERIAL AND METHODS

Everett E. Collin, Gray Court, S.C., assignor to Nordson Corporation, Amherst, Ohio

Filed Nov. 23, 1979, Ser. No. 96,655
Int. Cl.[3] B65H *75/02;* B65B *9/06*
U.S. Cl. 242—55 23 Claims

1. An unwind stand for unwinding and aligning reclosable stock pouch material, having a longitudinal closure formation, from a level wound supply roll, said stand defining an unwind path for said material, said stand comprising:

a frame;

means for rotationally supporting said roll on said frame;

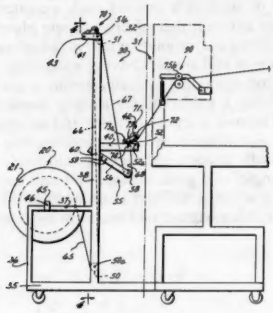
first material turn bar means spaced from said roll;

a second material turn bar means spaced above said first turn bar means, for supporting said material;

a first biased alignment roll means in cooperative disposition with respect to said second turn bar means for aligning said material;

a third material turn bar means for supporting said material;

a second biased alignment roll means in cooperative disposition with said third turn bar means;



material loop forming means disposed between said second and third turn bar means; and

wherein said material traverses a predetermined transverse distance when unwound from said roll, the length of said unwind path from said roll to said second material turn bar means being sufficiently long to permit constant alignment of said material by engagement of said first biased alignment roll means with said closure formation.

4,260,117

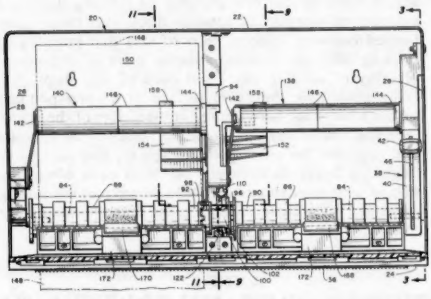
DUAL ROLL TOWEL DISPENSER

Jack L. Perrin, Los Angeles, and Council A. Tucker, Glendale, both of Calif., assignors to Towlsaver, Inc., City of Industry, Calif.

Filed Nov. 15, 1979, Ser. No. 94,469

Int. Cl.[3] B65H *19/04*

U.S. Cl. 242—55.3 **47 Claims**



1. In a dispensing device of the type having a first roll rotatable to dispense a first continuous web of material engaged therewith from a first web supply and a second roll rotatable to dispense a second continuous web of material engaged therewith from a second web supply; the improvements comprising: operating means operably connectable to each of said first and second rolls for rotating said rolls; shiftable actuating means initially shifted operably connecting said operating means to said first roll for said operating means rotation of said first roll to dispense said first web from said first web supply while said second roll remains operably disconnected from said operating means and free of dispensing said second web; sensing means operably engaged with said first web for continuously sensing said first web during dispensing thereof to ultimately sense substantially depletion of said first web supply and then automatically shifting said actuating means to operably connect said operating means to said second roll for said operating means rotation of said second roll to dispense said second web from said second web supply while said first roll remains operably disconnected from said operating means.

4,260,118

SEAT BELT RETRACTOR

Haruyuki Ikesue, Fujisawa, Japan, assignor to NSK-Warner K.K., Tokyo, Japan

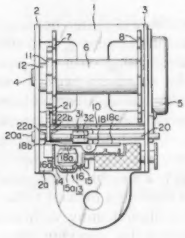
Filed Sep. 27, 1979, Ser. No. 79,364

Claims priority, application Japan, Oct. 4, 1978, 53/136487[U]

The portion of the term of this patent subsequent to Nov. 18, 1997, has been disclaimed.

Int. Cl.[3] A62B *35/02*; B65H *75/48*

U.S. Cl. 242—107.4 A **2 Claims**



1. A mechanism for making an emergency-lock mechanism in a retractor inoperative when emergency-lock is unnecessary, having webbing take-up means having a main gear and an auxiliary gear, inertia sensing means for directly sensing a predetermined variation in speed of a vehicle body by an inertia, an auxiliary lock member capable of assuming a first pivoted position, an intermediate pivoted position and a second pivoted position in the same plane in response to said inertia sensing means, said auxiliary lock member when in said first pivoted position being incapable of meshing with said auxiliary gear, said auxiliary lock member when lying in the same plane as said auxiliary gear being capable of meshing with said auxiliary gear in its said intermediate pivoted position, said auxiliary lock member when meshing with said auxiliary gear in said intermediate pivoted position being brought from said intermediate pivoted position to said second pivoted position by the rotation of said take-up means, and a main lock member normally being in a non-meshing position with said main gear but adapted to come into a meshing position with said main gear in response to the movement of said auxiliary lock member from said intermediate pivoted position to said second pivoted position and mesh with said main gear to prevent draw-out of webbing, the improvement residing in:

that said auxiliary lock member can assume a first axial position on a plane in which said auxiliary gear lies and a second axial position axially spaced apart from said plane and in which said auxiliary lock member cannot mesh with said auxiliary gear;

that a support member for supporting said auxiliary lock member is provided, said support member pivotally supporting said auxiliary lock member so as to be capable of assuming said three pivoted positions and being axially movable to move said auxiliary lock member between said first axial position and said second axial position; and

that operating means for moving said support member is provided, said operating means including an operating member capable of assuming two positions with respect to

said support member, said operating member when in its first or second position with respect to said support member being capable of moving said support member, said operating member when in its second position holding said auxiliary lock member in its first pivoted position.

4,260,119

APPARATUS FOR SUPPORTING AND GUIDING A FLEXIBLE LINE

Dennis D. Price, Joliet, Ill., assignor to Midland Metalcraft Company, Joliet, Ill.

Filed Mar. 28, 1979, Ser. No. 24,565
Int. Cl.³ B65H *57/00*
U.S. Cl. 242—157 R **8 Claims**

1. Apparatus for supporting and guiding a flexible line for movement along a path having a substantially straight portion and having a downwardly concave portion located at one end of said straight portion, said apparatus comprising a guide having means for supporting said line for movement along said straight portion, and a length of roller chain attached to and projecting from one end of said guide, said chain having pairs of links pivotally interconnected to one another by generally horizontal pivots extending transversely of said path and between said pairs of links, said chain further including rollers rotatably supported by said pivots and disposed within said links, so that the longitudinal axes of said rollers coincide with the longitudinal axes of said pivots, the surface of said rollers being recessed below the edges of said links, and adapted to support said line, and means on said links for limiting downward pivoting of said links about said pivots and for causing said chain to project from said guide and assume a downwardly concave curvature.

4,260,120

TAPE DRIVING APPARATUS

Yoshihito Urata, Katano, and Toshiharu Sasaki, Kawanishi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 17, 1979, Ser. No. 58,812
Claims priority, application Japan, Jul. 20, 1978, 53-89054
Int. Cl.³ G03B *1/04*; G11B *15/32*
U.S. Cl. 242—201 **6 Claims**

1. A tape driving apparatus for driving a magnetic tape, comprising:

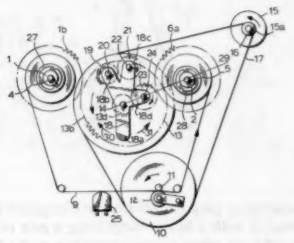
a pair of reel hubs for carrying reels for supplying and taking up the tape;

an intermediate wheel having a rotational axis disposed non-coaxially relative to the rotational axes of said reel hubs;

driving means connected to said intermediate wheel for driving said intermediate wheel;

control means for controlling the connection of said intermediate wheel to said reel hubs for respectively driving said hubs in the desired direction and at the desired speed, said control means being pivotally mounted for movement around an axis coaxial with the rotational axis of said intermediate wheel between first, second and third positions; and

a plurality of idle wheels mounted on said control means and connected to said intermediate wheel for being driven by said intermediate wheel, and being constituted by a first idle wheel which is driven by said intermediate wheel at a low speed and is connected to one of said reel hubs only when said control means is in said first position, a second



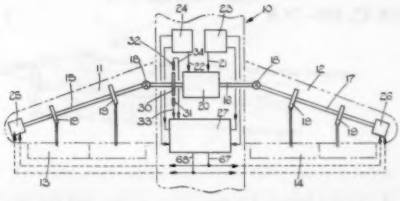
idle wheel which is driven by said intermediate wheel at a high speed and is connected to the other of said reel hubs only when said control means is in said second position, and a third idle wheel which is driven by said intermediate wheel at a high speed and is connected to said one of said reel hubs only when said control means is in said third position, whereby said reel hubs are driven and controlled for slow winding, fast winding and fast rewinding.

4,260,121

DRIVE ARRANGEMENT FOR LIFT CONTROL SURFACES ON ALL AIRCRAFT WINGS

Trevor A. J. Baston, Albrighton, and John R. Wynne, Finchfield, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Nov. 18, 1977, Ser. No. 852,823
Claims priority, application United Kingdom, Nov. 24, 1976, 48904/76
Int. Cl.³ B64C *19/00*
U.S. Cl. 244—213 **9 Claims**



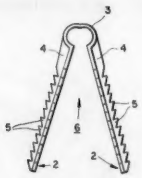
1. In an aircraft having a wing, a lift control surface operatively carried by said wing, a drive shaft connected to actuate said control surface, and drive means for said shaft, an arrangement for fixing the position of said control surface in the event of an emergency, comprising means for providing a first electrical signal dependent upon the speed of said drive means, means for providing a second electrical signal dependent upon the speed of said drive shaft, means responsive to the first and second signals for determining a relative positional relationship between the drive means and the drive shaft, means for providing an output signal in response to a predetermined level of difference in the positional relationship between the drive means and the drive shaft, and means responsive to said output signal for restraining said shaft against driving movement.

4,260,122

CLAMPING WALL PLUG FOR ELONGATED BODIES

Johann Fiala, Griegstrasse 1 - 3/9, A-1200 Wien XX, Austria

Filed Feb. 8, 1979, Ser. No. 10,719
Claims priority, application Austria, Feb. 17, 1978, 1164/78
Int. Cl.[3] F16B *15/02*
U.S. Cl. 248—71 **3 Claims**



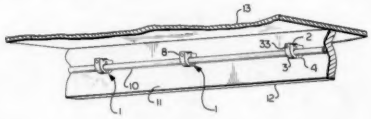
1. A clamping plug for affixing an elongated body to a member provided with a bore, comprising a pair of shanks receivable in said bore when pressed together, and a flexible ligature interconnecting corresponding ends of said shanks to form a circular eye of a diameter larger than the combined width of said shanks when they are pressed together in a closure position in which said eye is adapted to receive said body, each shank being of T section with a web in the plane of the eye and a cross-bar perpendicular thereto forming three flat, mutually orthogonal ribs each having an outer edge provided with a row of sawteeth adapted to grip the wall of the bore, said shanks contacting each other in their closure position along confronting surfaces formed by the cross-bars of their respective T's to constitute a bolt of cruciform cross-section with four toothed flanks, said rows of sawteeth being separated from said eye along each rib by a straight edge portion, the straight edge portions in the plane of the eye lying on lines which are substantially tangent to said eye and which taper and converge in said closure position toward said rows of sawteeth.

4,260,123

TUBING HANGER

Joseph P. Ismert, 4000 Main St., Box 282, Grandview, Mo. 64030

Filed Nov. 23, 1979, Ser. No. 96,817
Int. Cl.[3] F16L *3/08*
U.S. Cl. 248—74 R **7 Claims**



1. A tube hanger for supporting a tube and the like from a mounting surface and comprising:

(a) a tube hanger of elastomeric material having a base;

(b) resilient, opposite first and second arms having respective spaced tip ends and extending outwardly from said base in semi-circular arc segments and converging to define a partially enclosed, substantially circular cavity in coordination with said base, said cavity being sized for receipt of a tube and having a lateral entrance thereinto between said tip ends, one of said arms being adapted for engagement with a mounting surface;

(c) an opening in said base intermediately of said arms and dividing said base into first and second base portions respectively, having said first and second arms extended therefrom and having a hinge means extending therebetween and flexibly connecting said first and second base portions for spreading said first and second base portions and said opposed arms apart and positioning same about the tube, said hinge means being spaced from said cavity and said opening communicating with said cavity; and

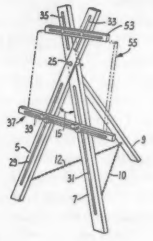
(d) a fastener extending at least partially through said base and for extension through said opening between said base portions; said fastener having an end for engagement with the mounting surface, a shank with a plurality of projections thereon and an enlarged head at a second end thereof whereby when said tube hanger is affixed to the mounting surface, said enlarge head compresses said base and squeezes the base portions together and pulls said arms tightly about said tube in a secure, supporting grip.

4,260,124

EASEL

Gregory S. Heilman, 2035 Kinsley, Santa Cruz, Calif. 95060

Continuation of Ser. No. 893,012, Apr. 3, 1978, abandoned. This application Jun. 28, 1979, Ser. No. 53,022
Int. Cl.[3] A47B *47/08*
U.S. Cl. 248—449 **1 Claim**



1. A folding easel comprising in combination:

(a) first and second uprights, each upright being formed with an elongate slot extending a substantial distance along the length of said uprights;

(b) a mortise in each of said uprights, said mortises being complementary and adapted to hold the two uprights crossed relative to each other and at an acute angle relative to each other;

(c) releasable clamp means at the middle of said mortises adapted to hold the two uprights together at the angle dictated by the mortises in a first position and permitting the two uprights to lie side by side in a parallel relationship in a carrying position of longitudinal alignment when said clamping means is removed;

(d) a leg member attached to said clamping means to hold the easel upright when the uprights are in said first position;

(e) a horizontal cross member adapted to be connected to said uprights below said clamping means, said cross member being formed with an elongate slot extending a substantial distance along the length thereof, the lengths of the slot formed in said cross member overlapping the slots formed in said uprights for various horizontal positions of adjustment,

(f) and means projecting through the slot of said cross member and slots of said uprights for securing said member to said uprights in various positions of horizontal adjustment and said carrying position of longitudinal alignment.

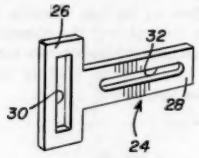
4,260,125
BRACKETS FOR MOUNTING MOTORS

Fred Levine, P.O. Box 380876, Miami, Fla. 33138

Division of Ser. No. 868,267, Jan. 5, 1978, Pat. No. 4,174,821, which is a continuation-in-part of Ser. No. 692,271, Jun. 3, 1976, Pat. No. 4,076,196. This application Jun. 20, 1979, Ser. No. 50,503

Int. Cl.³ F16M *1/00*

U.S. Cl. 248—675 **1 Claim**



1. In combination with a fan motor including a housing provided with mounting holes, a kit for relocating mounting holes of the fan motor in order to adapt the fan motor to a unit having mounting holes of different spacings than the mounting holes of the fan motor, the kit comprising, in combination: a first bracket including a longitudinally extending member having a substantially planar major surface and having two longitudinally spaced ends, two laterally spaced sides extending continuously from one end to the other, and said sides being interconnected at at least one point between said ends, a second bracket including a planar member which is T-shaped in configuration and includes a head portion and a leg portion, and having one slot being disposed in the leg portion and another slot in the head portion, the slots being longitudinally extending slots arranged extending substantially perpendicular with respect to one another, and a third bracket including a planar member which is generally T-shaped in configuration and includes a head portion curved in the plane of the member and having a leg portion extending substantially from the mid point of the curved head portion, there being three slots provided in the planar member, with two of the slots being curved slots provided in the head portion of the member and the other of the slots being provided in the leg portion of the member, with each of the first bracket, second bracket, and third bracket being usable individually or in combination with any other bracket.

4,260,126
APPARATUS FOR IN-SITU PRODUCTION OF CONCRETE SLABS

Philipp Schreck, Langbürgenerstrasse 2/13, 8 München 90, and Gerold A. Buck, Trollingerweg 39, 7050 Waiblingen, both of Fed. Rep. of Germany

Division of Ser. No. 932,403, Aug. 9, 1978. This application Dec. 4, 1979, Ser. No. 99,999

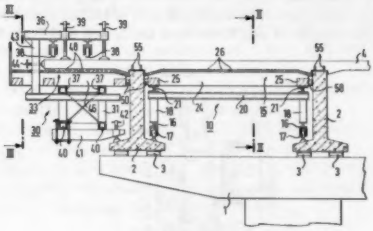
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1977, 2736524

Int. Cl.³ E04G *11/20*

U.S. Cl. 249—20 **8 Claims**

1. Apparatus for effecting the step-by-step production of a reinforced concrete slab bridging a span between and supported on transversely spaced permanent elevated longitudinally extending girders and the like supports which comprises carriages supported on and moveable along the length of said supports, a concrete shaping platform and a reinforcing core platform supported on said carriages spanning the space between the transversely spaced supports, and means for raising and lowering said platforms to accommodate simultaneous pouring of concrete around a previously built reinforcing core and building of an extension of the core in advance of the concrete.

4. Apparatus for forming a reinforced concrete slab bridging a span between and supported on transversely spaced permanent elevated longitudinally extending girders which comprises a platform for supporting and shaping the concrete slab, a platform for supporting metal rods in the fabrication of a metal reinforcing core for the slab positioned in front of the shaping platform, a truss support under said platforms, a C-shaped bracket secured to said truss support and extending upwardly therefrom to a level above the concrete slab to be formed, a carriage suspended from said C-shaped bracket



moveable along a previously formed concrete slab, a crossbeam above the girders, carriages riding on said girders supporting said crossbeam, and means suspending the forward end of the truss beam from said carriage supported crossbeam whereby the shaping and core material supporting platform are supported laterally of a girder from a previously formed concrete slab and from the tops of adjacent girders.

4,260,127
YOKE FOR USE IN CONCRETE WORK

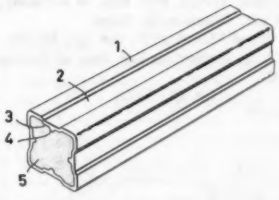
Masazo Nakamura, 50, Higashino-cho, Daihoji-machi, Minami-ku, Osaka-shi, Osaka-fu; Eiichi Sudo, 20-15, 2-chome, Nishikoiwa, Edogawa-ku, Tokyo-to, and Kiyoshi Urata, 13-11, 2-chome, Shinden, Ichikawa-shi, Chiba-ken, all of Japan

Filed Dec. 19, 1979, Ser. No. 105,738

Claims priority, application Japan, Oct. 19, 1979, 54-147168[U]; Oct. 19, 1979, 54-147169[U]

Int. Cl.³ B28B *7/00*

U.S. Cl. 249—207 **5 Claims**



1. A yoke for use in concrete work comprising a tubular body having a square section and provided with a longitudinal groove on the external surface of each side of said tubular body, said tubular body being filled with foamed plastic in at least both end portions of the bore thereof.

4,260,128
VALVE ACTUATORS AND COMBINED VALVES AND ACTUATORS

Kostag V. Tito, 14 Forest St., Saco, Me. 04005

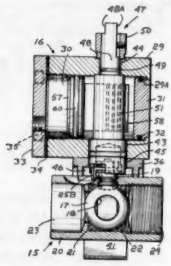
Filed Aug. 17, 1979, Ser. No. 67,333

Int. Cl.³ F16K *31/22*

U.S. Cl. 251—58 **5 Claims**

1. An actuator for a valve having an exposed stem, said actuator including a body having a cylindrical chamber, a rotor extending diametrically through said chamber and spaced from the ends thereof, said rotor including a lengthwise

series of teeth within said chamber, at least one piston within said chamber, said piston provided with a sealing ring and including an integral skirt with inner and outer segmental portions, the chordal face of said outer skirt portion being provided with a series of transverse teeth meshing with said rotor teeth and the opposite surface of said skirt including a plurality of circumferential spaced sockets adjacent and spaced in said outer skirt portion, a plurality of anti-friction buttons being press-fitted in each of said sockets, said buttons being solely positioned along the centerline of said transverse teeth, and the maximum cross-sectional area of said buttons being less than the length of said transverse teeth, and said body including two passageways, each for use in the delivery or relief of air, both passageways opening through the same end of the body, one passageway in communication with said chamber on the side of said one piston opposite said skirt and the other in communication with said chamber on the other side of said one piston, and means operable to clamp said valve to said actuator, one end of said rotor exposed and provided with means extending into said clamping means then operable to so grip said stem that said stem turns with said rotor, one passageway for use in effecting the turning of the rotor in a valve opening direction and the other passageway for use in effecting the turning of the rotor in a valve closing direction.



4,260,129

ROTARY SPHERICAL PLUG VALVE

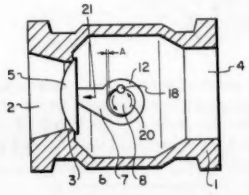
Heinz Groenefeld, Hanau, Fed. Rep. of Germany, assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 8, 1979, Ser. No. 37,059

Claims priority, application Fed. Rep. of Germany, May 26, 1978, 2822982

Int. Cl.³ F16K *31/44*

U.S. Cl. 251—77 **6 Claims**



1. A rotary valve having a rigid annular valve seat provided in a tube-like housing located concentrically to the longitudinal axis of said housing and having a rigid closure member formed as part of a sphere which is rigidly supported by two supporting arms one of which is connected to a driving shaft having a circular cross-section and extending transversely in the housing and being slightly offset with respect to the longitudinal axis of the housing, characterized in that a hub is provided at that end of the supporting arm connected to the shaft and a circular cross-section bore in the hub encircles a portion of the driving shaft which bore is slightly larger in diameter than the outer diameter of that portion of the driving shaft which extends into the circular cross-section bore in the hub and that for achieving a force-transmitting connection between the driving shaft and the hub a cylindrical connection member is provided extending in the direction of the driving shaft, with said connection member being disposed in an unsecured state between a semi-cylindrical groove in the outer surface of the driving shaft and a recess of semi-circular cross-section provided in the internal wall of the bore of the hub whereby the difference between the hub bore diameter and the diameter of said portion of said driving shaft creates play between said hub and said driving shaft which play prevents sticking of said closure member in said annular valve seat.

4,260,130

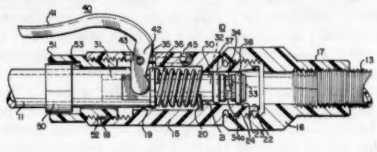
VALVE FOR CORROSIVE FLUIDS

George L. Brehm, Hilltown, Pa., assignor to B & G Equipment Company, Plumsteadville, Pa.

Filed Jul. 30, 1979, Ser. No. 61,665

Int. Cl.³ F16K *35/00, 31/58*

U.S. Cl. 251—113 **4 Claims**



1. A portable hand operated valve for corrosive liquid which comprises

housing means of corrosion resistant material having a separable forward housing part and a rearward housing part,

a fluid supply pipe connected to said rearward housing part and communicating with a bore in said rearward housing part,

a dispensing pipe extending within said forward housing part,

a spool valve of corrosion resistant material connected to said dispensing pipe and movable therewith,

said forward housing part having a first bore within which said dispensing pipe is movable, a second bore within which said spool valve is movable and a third bore aligned with and beyond said second bore,

said spool valve having spaced packing members movable in said second bore and one of which is movable beyond said second bore and into said third bore to permit liquid flow,

a handle member for moving said dispensing pipe and said spool valve in one direction,

a spring on said valve spool and in engagement with an abutment on said spool valve and a shoulder between said first and second bores for moving said pipe, said spool valve and said handle in the opposite direction,

said spool valve having an access opening between said packing members communicating with said dispensing pipe through the interior of said spool valve,

said spool valve being movable by said handle to a position with said one of said packing members in said third bore for access of fluid to said access opening and to said dispensing pipe,

the other of said packing members preventing access of fluid therebeyond in said second bore, and

locking means for preventing movement of said handle member,

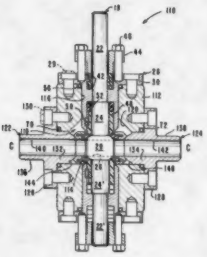
said locking means comprising an enlargement on said dispensing pipe and adjustable means on said housing for engagement with the enlargement.

4,260,131

LOW AND HIGH OPERATING TEMPERATURES VALVE

Peter G. Kindersley, Glens Falls, N.Y., assignor to Kamyr Valves, Inc., Glens Falls, N.Y.

Filed Sep. 27, 1978, Ser. No. 946,374
Int. Cl.[3] F16K 5/06
U.S. Cl. 251—214 28 Claims



1. A ball valve assembly comprising: a valve body having means defining two orthogonally positioned bores extending therethrough, first and second end members adapted to be secured within one of the bores in said body from opposite sides thereof, each of said first and second end members having means defining a bore extending therethrough, and a circularly recessed inner end having means defining a recess therein,

a ball having a spherically curved outer surface for cooperating with the circularly recessed inner end of said first and second end members and means defining a bore extending through said ball adapted to cooperate with the bores of said first and second end members to define the fluid conducting bore of said valve,

a ball supporting shaft extending away from opposite sides of said ball in a generally perpendicular direction with respect to said fluid conducting bore, each shaft including a trunnion bearing portion adjacent said ball,

enclosure and sealing means for enclosing and sealing each shaft within the other of said bores in said body, said enclosure and sealing means including an integral bearing tapering to a thinned area at first end thereof for rotatably engaging said trunnion bearing portions, and spring means positioned behind said bearing at a second end thereof for urging said bearing thinned area directly against said ball, and

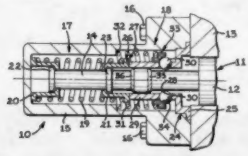
sealing means secured within the recess on the inner end of said first and second end members for sealing the area between the ball and the inner ends of said end members.

4,260,132

CONTROL VALVE WITH IMPROVED CENTERING AND DETENT MECHANISMS

Cyril W. Habiger, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00573, § 371 Date Aug. 6, 1979, § 102(e) Date Aug. 6, 1979, PCT Pub. No. WO81/00440, PCT Pub. Date Feb. 19, 1981
This PCT application filed Aug. 6, 1979, Ser. No. 108,909
Int. Cl.[3] F15B 13/01
U.S. Cl. 251—297 7 Claims



1. In a valve (10) having spool means (11) for movement between at least first and second positions, detent means (30) for releasably holding said spool means (11) in its second position upon movement thereof from its first position, retainer means (24) for mounting said detent means (30) thereon, said retainer means (24) being separate from said spool means (11), first biasing means (17) for moving said spool means (11) to its first position in response to release thereof by said detent means (30), and stop means (27) for engaging said first biasing means (17) to maintain said spool means (11) in its first position, said stop means (27) being defined on said retainer means (24), said detent means (30) including a plurality of circumferentially disposed detents (30) each mounted in a hole (28) defined through said retainer means (24), and second biasing means (31) for urging said detents (30) radially inwardly toward said spool means (11), the improvement comprising:

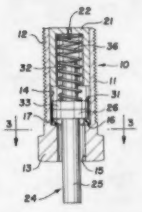
said first biasing means (17) including a first compression coil spring (19) and said detent means (30) including a second compression coil spring (31) disposed in concentric and overlapping relationship with respect to said first compression coil spring (19).

4,260,133

ANIMAL WATERING VALVE WITH PROTECTED BIASING SPRING

Earl C. Thompson, Box 549, Hewitt, Tex. 76643; Morris C. Keller, Dallas, Tex., and Francis Rustin, Springfield, Mo., assignors to Earl Clayton Thompson, Hewitt, Tex.

Filed Jan. 12, 1979, Ser. No. 3,006
Int. Cl.[3] F16K 31/00; A01K 7/00
U.S. Cl. 251—339 12 Claims



1. A valve comprising

a housing having an inner end and an outer end, a chamber, a central passage opening to said outer end from said chamber, and an internal annular shoulder surrounding said passage and defining a valve seat;

a valve closure member comprising an elongated stem with a radially enlarged head at one end; said head being configured to seat on said valve seat and provide clearance with said chamber; said stem being dimensioned for annular clearance with said passage, and to project from said housing outer end thereby enabling rocking of said valve closure member;

a valve control member, disposed in said housing for axial reciprocating movement, comprising an elongated stem with a radially enlarged head at one end; said control member head confronting and engaging said closure member head; an elongated helical compression spring disposed over said control member stem and including one end of said spring bearing on said head, the other end of said spring bearing on means on said housing;

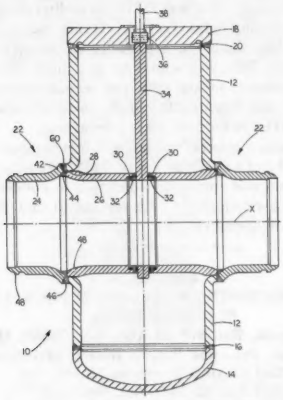
said elongated stem extending into a substantial portion of the length of said spring such that said means on said housing, said control member stem and said spring coact to confine said control member and said spring against lateral movement within said housing;

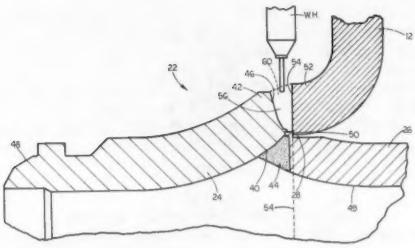
and said control member being urged by said spring to seat said valve closure member on said valve seat.

4,260,134
SKIRTED HUB WITH FULL PENETRATION BUTT WELD TO BODY

Roger L. Ripert, Concord, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.

Filed May 30, 1978, Ser. No. 910,623
Int. Cl.[3] F16K 3/00
U.S. Cl. 251—367 3 Claims





1. In a valve structure comprising:

a body member having a circular opening therein; and

a generally cylindrical hub member extending through said opening; wherein said hub member comprises an outer portion which is flared outward at its inner end into a bell section; a generally cylindrical inner portion nested within said bell section and welded to the inner surface of said outer portion; the inner end of said bell section forming a skirt;

the improvement comprising:

an integral, cylindrical weld joint portion on said body member around said opening forming an annular end coaxial therewith, lying substantially along a single plane outward of said body member;

said skirt on and around said hub member presenting an annular edge concentric thereto disposed toward and adjacent said annular end; and

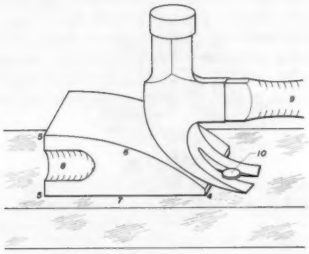
a weld around and between said annular edge and said annular end unitizing same so that pipeline loads on said hub member are transmitted through said skirt to said body member;

there being no reduction from inner pipeline diameter of said hub member from end to end and said hub member having means on the outer end thereof adapting it for connection into a pipeline and means on the inner end conditioned to receive a seal ring.

4,260,135
EASY PULL CLAWED TOOL REST

Avis M. Dickey, South Milford, Ind., assignor to Dickey, Inc., South Milford, Ind.

Continuation of Ser. No. 939,290, Sep. 5, 1978. This application Oct. 25, 1979, Ser. No. 110,659
Int. Cl.[3] B66F 1/00
U.S. Cl. 254—1 1 Claim



1. A new and improved one-piece fulcrumming clawed tool rest, having neither openings nor appendages and being molded of solidly compact resilient material, to preclude wearing without reinforcement while at the same time minimizing marring in use and being configured with smoothly gripping flat base in measurement two and two-thirds times in horizontal longitude the vertical height of the right-angled heel, the extremities of said base and heel connected by a portion of six-inch circle to create an arcuate top-surfaced, generally rectangular in cross section fulcrumming rest, said rest employing on each of its two sides a grip depression indent beginning midway of heel height and running parallel to the base toward its acute angled junction with the top arcuate surface and measuring one-fourth inch less than the heel height in longitude, one-fourth inch in concavity, and one-half heel height in width; the hereinbefore described fulcrumming clawed tool rest with base resting against work surface providing without assembly or disassembly fulcrumming leverage for all clawed tools in the pulling and removal of shorter carpentry fasteners, specifically nails, tacks, brads, etc., when said tool claws are inserted beneath the fastener's head or cross member and the arcuate clawed tool section is rolled up the rest's arcuate surface and providing fulcrumming leverage in the completion of longer carpentry fastener removal, specifically longer nails, spike nails, etc., when the rest is reversed to place the heel in close proximity to the partially pulled fastener and the arcuate clawed tool section is rolled down the rest's arcuate section.

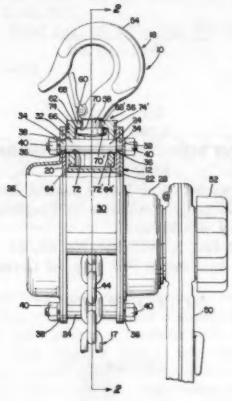
4,260,136
SUSPENSION HOOK ASSEMBLY

James R. Harman; William M. Larson, both of Forrest City, and J. B. Threat, Crawfordsville, all of Ark., assignors to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 938,194, Aug. 30, 1978, abandoned. This application Mar. 3, 1980, Ser. No. 126,623
Int. Cl.[3] B66D 3/00
U.S. Cl. 254—380 5 Claims

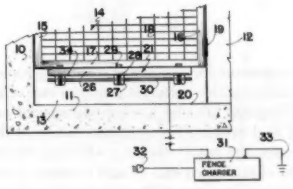
1. In a hoist comprising a first frame member, a second frame member, a plurality of pin members extending through said first and second frame members and maintaining said first and second frame members in fixed spaced relationship to one another, and a suspension hook assembly received between said first and second frame members and pivotally attached to said frame members, said suspension hook assembly comprising a yoke assembly and a hook member pivotally received in said yoke assembly; the improvement wherein said hook member includes a substantially cylindrical shank portion, and said yoke assembly comprises first and second half-cylindrical

members assembled in surrounding relation to said shank portion, and a closed ring received over said assembled half-cylindrical members, each of said half-cylindrical members having a



radial projection extending outwardly therefrom and a hole formed therein to receive one of said pin members, said ring being received between said projections and said holes.

4,260,137
ELECTRIC GATE WITH SEMI-PROTECTED ELECTRODE
Frank R. Laurenz, P.O. Box 359, Eagle Butte, S. Dak. 57625
Filed Mar. 26, 1979, Ser. No. 23,747
Int. Cl.[3] A01K *3/00*
U.S. Cl. 256—10 **14 Claims**



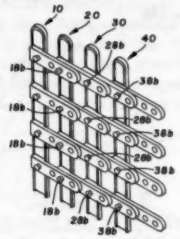
1. In an electric fence which includes a transverse lower side spaced above the floor, ground or the like, an ungrounded conductor electrode spanning said lower side between said lower side and the ground and being connectable to a source of electrical energy, and a partial shield on at least one side of said conductor and being spaced therefrom, thereby providing restricted access to said conductor from said one side, said partial shield extending downwardly from the lower side of said fence and with its lower edge terminating spaced above said electrode.

4,260,138
PICKET FENCE
Lyle L. Freer, 317 SW. 7th, Wadena, Minn. 56284
Filed Sep. 12, 1979, Ser. No. 74,820
Int. Cl.[3] E04H *17/16*
U.S. Cl. 256—19 **11 Claims**

1. A picket fence comprising:

a plurality of fence pickets, each fence picket comprising a substantially rigid upright member and a plurality of horizontal members fixedly secured to the rigid upright member and projecting outwardly from one face thereof across the width of said upright member;

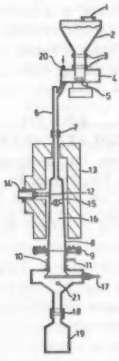
a plurality of vertically spaced pegs fixedly secured to the portions of the horizontal members where they project



across the width of the upright member of the fence picket and projecting outwardly therefrom;

the horizontal members of each fence picket having a plurality of apertures therethrough for receiving said pegs; and means for retaining said pegs within said apertures.

4,260,139
REFINING OF METALS
Raymond E. Oliver, Johannesburg, South Africa, and John B. Payne, London, England, assignors to Matthey Rustenburg Refiners (Pty.) Limited, Johannesburg, South Africa
Continuation of Ser. No. 845,390, Oct. 25, 1977, abandoned, which is a division of Ser. No. 559,424, Mar. 18, 1975, Pat. No. 4,086,084. This application Aug. 13, 1979, Ser. No. 66,283
Claims priority, application United Kingdom, Mar. 21, 1974, 12597/74
Int. Cl.[3] C21B *7/22*
U.S. Cl. 266—154 **8 Claims**



1. An apparatus for separating base metal and silver components from a solid particulate mixture thereof with a precious metal component which comprises:

(a) a gas-tight means including a vibrofeeder for feeding particulate solid into a tubular vessel;

(b) a vertical shaft reaction chamber connected to the tubular vessel and having an inlet for the introduction of halogen-containing gas and an outlet for exhaust gases including volatilized halides;

(c) heating means, disposed around the shaft reaction chamber, and

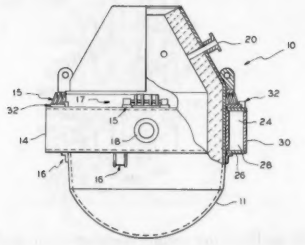
(d) a discharge system whereby, precious metal-containing residue may be ejected from the reaction vessel.

4,260,140

METALLURGICAL VESSEL

Rashed N. Nagati, Mars, Pa., assignor to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed Sep. 12, 1979, Ser. No. 75,161
Int. Cl.³ C21C *5/50*
U.S. Cl. 266—246 **13 Claims**



1. A metallurgical vessel, a trunnion support disposed adjacent said vessel, bracket means attached to said vessel for supporting the same on said trunnion support, and a bracket retainer assembly mounted adjacent at least some of said bracket means for retaining said bracket means adjacent said trunnion support,

said bracket retainer assembly comprising first and second spaced-apart retainer members disposed respectively on the opposite sides of the adjacent bracket means and connecting means for coupling said retainer members to each other and to said bracket,

first and second fixed means affixed respectively to said trunnion support adjacent one of said first and second retainer members,

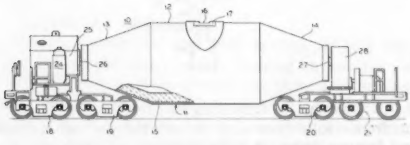
said fixed means each including a portion for engaging its associated retainer member to prevent movement of said retainer member and the bracket means coupled thereto away from said trunnion support and for permitting sliding movement thereof in a direction generally radial of said vessel. Whereby said retainer assembly and said fixed means retain said bracket means on said trunnion support but permit relative sliding movement.

4,260,141

CENTERPLATE WEAR LINERS

Rashed N. Nagati, Mars, Pa., assignor to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed Jul. 16, 1979, Ser. No. 57,758
Int. Cl.³ C21C *3/10*
U.S. Cl. 266—287 **11 Claims**



1. A centerplate liner system for preventing wear between a circular centerplate and a circular recessed socket adapted for receiving and supporting the centerplate in rotational contact therewith, said system comprising:

an annular liner means disposed within said socket and surrounding the periphery of said centerplate, said annular liner being constructed of a wear-resistant material;

a generally planar liner means disposed in said socket, and below said centerplate said planar liner means being constructed of a wear-resistant material; and

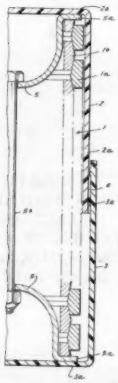
means for restraining vertical movement of said annular liner means out of said socket.

4,260,142

ARRANGEMENT FOR RESILIENT ABSORPTION OF FORCES

Christian Stiefel, Aachen, and Harry Jansen, Moers, both of Fed. Rep. of Germany, assignors to Ringfeder G.m.b.H., Krefeld, Fed. Rep. of Germany

Filed Jun. 1, 1979, Ser. No. 44,551
Claims priority, application Fed. Rep. of Germany, May 4, 1979, 2918095
Int. Cl.³ F16F *3/06*
U.S. Cl. 267—9 A **10 Claims**

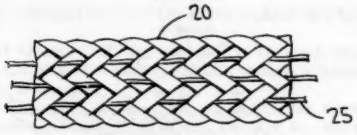


3. An arrangement for resiliently absorbing forces, particularly for an intermediate buffer coupling of rail vehicles, comprising an elongated housing having two spaced ends, one of said ends of said housing being closed, whereas the other of said ends is open and has an opening; a friction element located in the region of said open end of said housing; a resilient element cooperating in series with said friction element and located in a portion of said housing which is spaced from said opening in direction of elongation of said housing, said opening of said housing having a transverse dimension which is smaller than the inner transverse dimension of said portion of said housing in which said resilient element is located, said resilient element being formed as a friction spring having a plurality of inner conical rings and a plurality of outer conical rings which cooperate with one another with interposition of a lubricant; and outer and inner cup-shaped casing members in said housing and telescopable in one another, said cup-shaped members closably accommodating said outer rings and said inner rings therebetween and being sealed relative to one another, at least said outer cup-shaped member having a diameter which exceeds the transverse dimension of said opening of said housing, said outer cup-shaped member being elastically deformable so that despite the fact that its diameter exceeds the transverse dimension of said opening of said housing, said outer cup-shaped member can be inserted into said housing through said opening because of its capability of being deformed during this insertion from its diameter exceeding the transverse dimension of said opening of said housing to a diameter at least equal to the same.

4,260,143
CARBON FIBER REINFORCED COMPOSITE COIL SPRING

Howard S. Kliger, Edison, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Jan. 15, 1979, Ser. No. 3,671
Int. Cl.[3] F16F *1/04*
U.S. Cl. 267—148 8 Claims

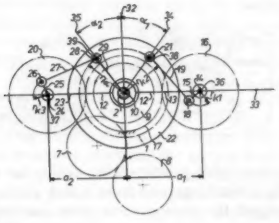


1. A carbon fiber reinforced composite coil spring comprising a coil spring structure formed of braided carbon fibers and a quantity of resin serving as a substantially continuous matrix material for said braided fibers, said carbon fibers being braided at an angle of approximately plus or minus 30° to plus or minus 60° to the braid axis, said composite coil spring further including a quantity of reinforcing fibers disposed within the braid and oriented longitudinally to the braid axis.

4,260,144
DRIVE FOR A CONVEYOR DRUM IN A FOLDER

Hartwig H. Trutschel; Günter K. Schmitt, both of Würzburg, and Franz J. Sendelbach, Roden, all of Fed. Rep. of Germany, assignors to Koenig & Bauer Aktiengesellschaft, Würzburg, Fed. Rep. of Germany

Filed Jan. 14, 1980, Ser. No. 111,636
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1979, 2906423
Int. Cl.[3] F16H *21/14;* B65H *45/16*
U.S. Cl. 270—14 5 Claims



1. A planetary crank gear for a conveyor drum equipped with controllable pins or grippers in a folder in a rotary printing machine, comprising:

a double-armed wheel lever supported on a drum journal of said conveyor drum, said wheel lever being capable of rotating and of being driven by a drive means of said printing machine;

a first crank shaft integrally formed with a first planetary gear rotatably supported in a first arm of the wheel lever at a distance a_1 from the axis of rotation of said conveyor drum;

a first crank, having a radius of crank circle r_{k1}, integrally formed with said first crank shaft;

a first rotary crank journal of said first crank being connected by means of a first joint with a first connecting piece;

said first connecting piece being connected by means of a second joint with a second rotary crank journal, having a radius of crank circle r_{k2}, of a swing mass, said swing mass being rotatably supported on said drum journal;

a second crank shaft integrally formed with a second planetary gear rotatably supported in a second arm of said wheel lever at a distance a_2 from said axis of rotation;

a second crank, having a radius of crank circle r_{k3}, being integrally formed with said second crank shaft **24**;

a rotary third crank journal of said second crank being connected with a second connecting piece;

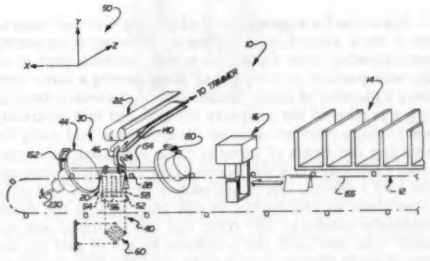
said second connecting piece being connected with a crank lever, having a radius of crank circle r_{k4}, by means of a fourth rotary crank journal, said crank lever being secured to said drum journal to rotate said conveyor drum;

said first and second planetary gears rotating on a sun gear.

4,260,145
SIGNATURE HANDLING APPARATUS

Henry R. Mebus, Nazareth, and Leonard Miaskoff, Easton, both of Pa., assignors to Harris Corporation, Cleveland, Ohio

Filed May 4, 1979, Ser. No. 35,813
Int. Cl.[3] B65H *39/02*
U.S. Cl. 270—54 17 Claims



1. An apparatus for handling signatures having a folded edge and for transferring such signatures from a first conveyor continuously moving signatures along a first conveyor path with the folded edge up to a second conveyor conveying the signatures along a path vertically displaced from and transverse to said first conveyor path, said apparatus comprising, a gripper assembly, means for moving said gripper assembly along an oblique transfer path between a signature pickup point adjacent said first conveyor path and a signature release point adjacent said second conveyor path, said means for moving said gripper assembly including means for imparting to said gripper assembly motion having a component parallel to the direction of said first conveyor path at said pickup point and motion having a component parallel to the direction of said second conveyor path at said release point, said gripper assembly including a gripper finger, a gripper pad opposed to said gripper finger, and means for causing said gripper finger and pad to engage a signature therebetween at said pickup point and to release said signature at said release point.

13. An apparatus for transferring a signature from a first location to a second location, said apparatus including a gripper finger, a gripper pad, means for causing said gripper finger and gripper pad to trace out an elliptical path, said means including means for rotating said gripper finger and pad about an axis spaced from said gripper finger and gripper pad and for reciprocating said gripper finger and gripper pad along a path parallel to said axis of rotation and in synchronism with the rotation of said gripper finger and gripper pad about said axis of rotation, and drive means for causing said gripper finger and gripper pad to engage a signature therebetween when said gripper finger and pad are at the first location and to release the signature when said gripper finger and pad are at a second location.

4,260,146
PROCESS AND APPARATUS FOR SEPARATING FLAT SHEET MATERIAL

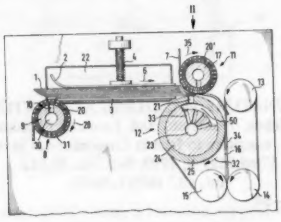
Wilhelm Mitzel, Neukeferloh, Fed. Rep. of Germany, assignor to G.A.O. Gesellschaft fur Automation und Organisation mbH, Munich, Fed. Rep. of Germany

Filed Jun. 22, 1979, Ser. No. 50,975

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1979, 2905278

Int. Cl.³ B65H *3/10*

U.S. Cl. 271—94 **6 Claims**



1. Apparatus for separating and advancing sheets of material from a stack thereof, said apparatus including a separating drum extending from a plate on which the stack rests in an edge-wise position, said separating drum having a stator containing a plurality of axially spaced suction channels extending along a portion of the periphery thereof, and said separating drum having a rotor mounted on the exterior of said stator for contacting the sheets of material to be separated, said rotor having a plurality of suction openings each of which communicates with a selected one of said suction channels as said rotor rotates about an axis normal to said plate so that the sheets sequentially adhere to said rotor and are separated and advanced from the stack, the peripheral length of said suction channels decreasing as their spacing from the plate increases, said suction channels being arranged on the stator such that the suction opening closest to said plate communicates with its suction channel before the other suction openings when said rotor rotates.

4. Apparatus for separating the advancing sheets of material from a stack thereof, said apparatus including a separating drum extending from a plate on which the stack rests in an edge-wise position, said separating drum having a stator containing a plurality of axially spaced suction channels extending along a portion of the periphery thereof, and said separating drum having a rotor mounted on the exterior of said stator for contacting the sheet of materials to be separated, said rotor having a plurality of suction openings each of which communicates with a selected one of said suction channels as said rotor rotates about an axis normal to the plate so that the sheets sequentially adhere to said rotor and are separated and advanced from the stack, said suction openings being axially out of alignment such that the suction opening closest to said plate communicates with its suction channel before the other suction openings when said rotor rotates.

4,260,147
UTILIZATION OF AIR JETS FOR DISCHARGE CONVEYOR ON WICKETING SYSTEMS

Philip J. Houle, Smithfield, R.I., and Robert G. Oliver, South Dartmouth, Mass., assignors to Gloucester Engineering Co., Inc., Gloucester, Mass.

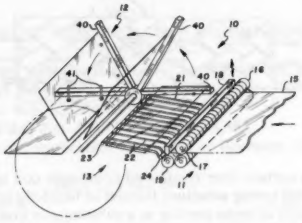
Filed May 24, 1978, Ser. No. 909,000

Int. Cl.³ B65H *29/68, 29/40*

U.S. Cl. 271—182 **3 Claims**

1. In combination, conveyor means for sequentially moving flexible plastic film products along a predetermined first plane and axial direction for delivery onto a base pad having a surface forming a stacker input station, and gaseous discharge means for controlling the delivery of said flexible plastic film product onto said stacker input station, said gaseous discharge means comprising:

(a) a plurality of generally parallelly disposed spaced apart gaseous discharge nozzles having discharge orifices disposed generally beneath said predetermined plane and arranged to deliver a flow of compressed gaseous fluid along a second plane generally below said base pad surface, said base pad surface comprising a grid formed of a



plurality of generally parallelly disposed spaced apart stationary rods, said discharge nozzles being arranged to deliver said flow along an axis generally parallel to and in said predetermined axial direction; and

(b) means for delivering a flow of compressed gaseous fluid to said discharge nozzles under a pressure sufficient to establish a gaseous flow stream induced pressure reduction along said second plane.

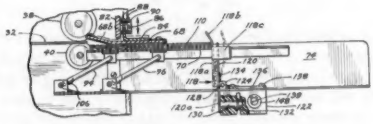
4,260,148
PHOTOGRAPHIC PRINT STACKING DEVICE

Robert E. Diesch, Rogers, and Charles L. Eutenuer, St. Michael, both of Minn., assignors to Pako Corporation, Minneapolis, Minn.

Filed Mar. 16, 1979, Ser. No. 21,091

Int. Cl.³ B65H *31/14, 31/26*

U.S. Cl. 271—219 **28 Claims**



1. A photographic print stacking device for use with a system having a discharge end from which photographic prints are discharged, the photographic print stacking device comprising:

a receiving platform positioned slightly below and extending outwardly from the discharge end with an upper surface on which prints are stacked, the platform being movable downward as prints are stacked thereon;

a floating foot element disposed above the receiving platform in generally opposed relation thereto with a lower surface thereof lying in a plane parallel to the upper surface of the receiving platform while keeping an essentially continuous downward force across essentially the entire transverse width of the photographic prints being stacked on the receiving platform, the floating foot element having deflecting means positioned proximate the discharge end to guide the photographic prints downwardly between the foot element and the receiving platform and being adapted to move upwardly in response to engagement by the photographic prints discharged from the conveyor system, to facilitate movement of the prints between the lower surface and the platform;

means for maintaining the receiving platform in substantially parallel relation to and below the delivery plane and for

yieldably urging the receiving platform toward the floating foot element; and

stop means for stopping prints as they are deposited between the receiving platform and the floating foot element and for maintaining the prints in a predetermined stacked relationship.

4,260,149

SHEET REGISTRATION ON FEED TABLE OF PRINTING PRESS

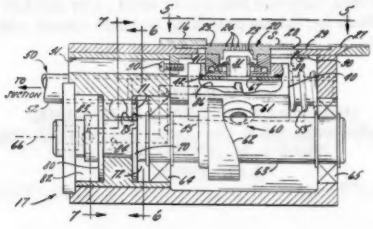
Rudolf Melzer, Hainburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 45,885, Jun. 6, 1979, abandoned. This application Aug. 15, 1979, Ser. No. 66,532

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1978, 2824932

Int. Cl.[3] **B65H** *9/10*

U.S. Cl. 271—236 **19 Claims**



1. In a device for registering a sheet against front and side stops on the feed table of a printing press having a press drive and means for cyclically feeding sheets across the table toward the front stop, the combination comprising a suction head recessed in the table adjacent to the side stop and having a set of openings which are flush with the table, the suction head being shiftable parallel to the surface of the table, reciprocating means coupled to the press drive and timed with the arrival of a sheet at the front stop for shifting the head laterally in the direction of the side stop and for returning it, a source of suction, valve means coupled to the source of suction for admitting suction to the head timed with the lateral shifting movement so that the sheet is shifted into contact with the side stop, anti-friction means for mounting the suction head for free play from a reference position in the direction of feeding movement so that the sheet is free to settle against the front stop as it is shifted by the head toward the side stop, and means timed with the return of the head for restoring it to reference position thereby to insure that the full amount of play is available for the next sheet.

2. In a device for registering a sheet against front and side stops on the feed table of a printing press having a press drive and having means for cyclically feeding sheets across the table toward the front stop, the combination comprising a suction head recessed in the table adjacent the side stop and having a top surface including a set of openings, means mounting the suction head for movement parallel to the surface of the table with the top surface of the head being maintained flush with the surface of the table, reciprocating means coupled to the press drive and timed with the arrival of the sheet at the front stop for shifting the head laterally in the direction of the side stop and for returning it, a local source of suction, first valve means coupled to the source of suction for admitting suction to the head timed with the lateral shifting movement so that the sheet is shifted into contact with the side stop, an auxiliary nozzle mounted for discharge below said openings, a local source of air pressure, and second valve means coupling the nozzle to the source of air pressure for applying a short puff of air to the openings timed with completion of the shifting movement to free the sheet from the head in readiness for removal of the sheet from the table.

4,260,150

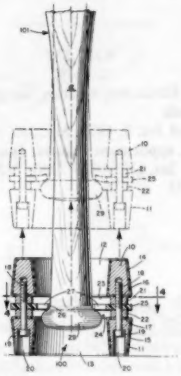
WEIGHT FOR A BALL BAT

Michael A. Tabet, 1302 Pamela Pl., Norfolk, Va. 23518

Filed Aug. 17, 1979, Ser. No. 67,553

Int. Cl.[3] **A63B** *69/40*

U.S. Cl. 273—26 B **13 Claims**



11. A weight for mounting on a conventional baseball bat to increase the weight thereof, said weight having two ring-shaped rigid members having openings therein shaped to surround a bat, said members having a higher density than that of a baseball bat and fixed together with said openings aligned and with a space therebetween, and a resilient member disposed between the ring-shaped members in spaced relation with each of the ring-shaped members and having an opening therethrough to removably secure the weight to a ball bat.

4,260,151

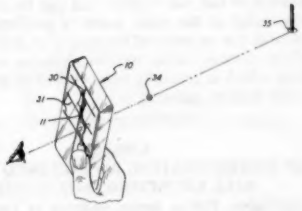
GOLF GREEN SLOPE INDICATING DEVICE

Harold J. Weaver, 229 S. Seward Ave., Auburn, N.Y. 13021

Filed Jun. 20, 1979, Ser. No. 50,464

Int. Cl.[3] **A63B** *57/00*

U.S. Cl. 273—32 H **1 Claim**



1. A hand held golfer's sighting device for use when putting to indicate the direction of slope of a golf green comprising a hollow parallelepiped having transparent front and back walls connected in spaced relation to one another by top and bottom walls and a pair of side walls, and an elongated pointer element pivotally mounted in the device between the transparent front and back walls, the pointer element having a pivot axis located approximately midway between its ends, the device being adapted to be held in a generally upright position above the ground for sighting therethrough, the pointer being weighted at one end whereby it operates as a plumb bob within the

device, the transparent front wall having an elongated longitudinal sight line and a plurality of spaced apart parallel transverse sight lines thereon, the longitudinal sight line passing through the pivot axis of the pointer element and said transverse sight lines being located between said pivot axis and the top wall of the device. Whereby the slope of the golf green and the direction that the ball should be putted is indicated by said pointer when at least one of said transverse lines is positioned to register with the slope of the green and the golf ball and the putting cup are sighted on and aligned with said longitudinal sight line.

4,260,152

GAME

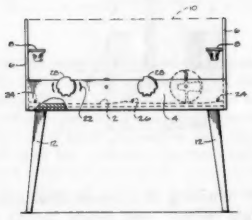
Kurt B. Karlsen, Etobicoke, Canada, assignor to Finn Jensen, Montreal, Canada

Filed Jul. 9, 1979, Ser. No. 56,142

Claims priority, application Canada, Jun. 18, 1979, 330035

Int. Cl.³ A63F *7/20, 7/24*

U.S. Cl. 273—85 D **14 Claims**



1. A game having a bottom surface and upstanding side and end walls providing a playing area and a target provided at each end, and an equal number of spaced parallel control rods extending through the side walls and transversely across the playing area, the control rods being axially movable and rotatable, manipulation of half of the rods being by a player on one side of the game and manipulation of the remaining rods being by a person on the opposite side, the control rods being parallel with the bottom surface and each control rod carrying at least one ball control device for picking up a game ball from the bottom surface and projecting the ball toward a target upon manipulation of the respective control arm,

each ball control device comprising two opposed ball scoops and a trackway extending therebetween whereby upon rotation of the rod, a game ball can be transferred from one scoop to the other enabling projection of the ball towards one or other of the targets as desired, the scoops of the devices during rotation defining an arc of movement which is generally tangential to an adjacent portion of the bottom surface.

4,260,153

GAME INCORPORATING AN INCLINED RAMP IN A BALL LAUNCHING MECHANISM

Toru Nishimiya, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Dec. 18, 1979, Ser. No. 104,790

Claims priority, application Japan, Dec. 27, 1978, 53/182403[U]

Int. Cl.³ A63F *7/06*

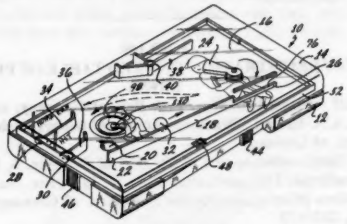
U.S. Cl. 273—89 **10 Claims**

1. A game of the type having a housing and including a ball launching mechanism, a ball propulsion mechanism and at least one target located in the housing which comprises:

a plurality of balls contained in said housing;

a reservoir means located in said housing to store said plurality of balls;

said ball launching mechanism including an inclined ramp, a ball injection means located near the uppermost end of said inclined ramp, said ball injection means operatively associated with said ball reservoir means to receive said ball from said ball reservoir means and inject said balls onto said inclined ramp one at a time;



said ball propulsion mechanism located near the lower end of said inclined ramp such that as said balls roll down said inclined ramp said balls can be acted on by said ball propulsion mechanism propelling said balls toward said target.

4,260,154

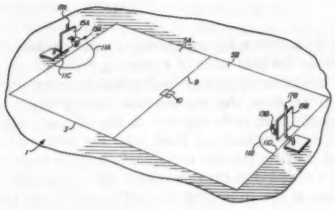
METHOD OF PLAYING A BALL GAME

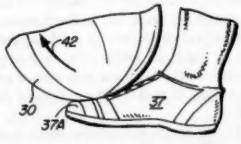
Jose D. Balbastro, 628 E. Chanslorway, Blythe, Calif. 92225

Filed Feb. 26, 1979, Ser. No. 14,882

Int. Cl.³ A63B *67/00*

U.S. Cl. 273—411 **6 Claims**





1. A method of playing ball game on a playing surface using an inflated ball, said method comprising the steps of:

a. pushing the ball on the playing surface with a foot of an offensive player past a defensive player into a first goal shooting area, the playing surface having a flat playing surface bounded by a boundary line, the first goal shooting area being located within the boundary line, a first goal including a backboard and a rigid loop facing the court and positioned above a boundary of the first goal shooting area, the rigid loop including a generally circular opening lying in a plane parallel to the playing surface and located a predetermined distance above the playing surface, said pushing being performed only by means of the sides of the feet of the players of the ball game; and

b. shooting the ball toward the basket by lifting the ball by means of at least one foot of the offensive player, thereby attempting to score a field goal by causing the ball to

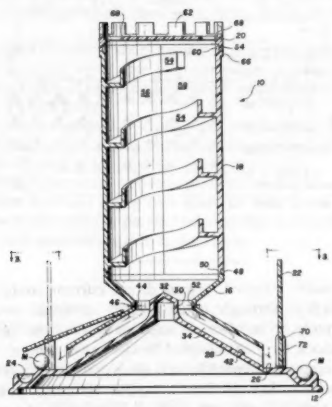
travel above the goal and fall through the opening thereof, said shooting being performed by an offensive player within said first goal shooting area while the other players are located outside of said first goal shooting area, said predetermined distance being selected in accordance with the skills of children playing said game, wherein players are assigned to first and second teams, each team having a designated shooter who performs said shooting for his or her respective team, the players of each team being assigned to be the designated shooter for their respective team for a predetermined interval of time, a penalty being imposed on the team of any player who kicks the ball, intentionally touches the ball with any part of his body other than the sides of his feet during said pushing, or intentionally touches the ball with any part of his body other than the sides of his feet or the toes of his feet during said shooting, said penalty including allowing a player from the opposite team to shoot the ball from within said first shooting area.

4,260,155

MARBLE RUNWAY GAME APPARATUS

Anthony Jordan, 4514 Weyburn Dr., Annandale, Va. 22003

Filed Apr. 2, 1979, Ser. No. 26,163
Int. Cl.³ A63F *7/02*
U.S. Cl. 273—120 R **7 Claims**



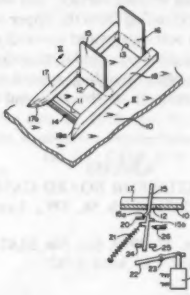
7. A skill game apparatus comprising, in combination, a stationary base having a target supporting, horizontal peripheral shoulder for the reception of movable targets and an inner upwardly inclined surface defining a ramp terminating in a peaked dome; upstanding partitons defining exit marble runways leading to said peripheral shoulder extending parallel with said ramp and formed integrally therewith; an inverted funnel section resting on said partitions concentrically with said dome but spaced therefrom to permit passage of a marble therebetween; an upper funnel section for directing marbles to said marble exit runways mounted on said inverted funnel section; an upwardly extending tower mounted on and concentrically with said upper funnel section and including a helical marble runway on the inner surface thereof for the discharge of marbles into said funnel; and a rotatable roof having a plurality of apertures mounted on said tower to enable the dropping of marbles therethrough at a selected position onto said helical runway.

4,260,156

TARGET APPARATUS FOR PINBALL MACHINES

Toshihiro J. Momura, Hollywood, Calif., assignor to Kabushiki Kaisha Universal, Oyama, Japan

Filed Jan. 10, 1980, Ser. No. 110,911
Int. Cl.³ A63B *71/00*
U.S. Cl. 273—127 R **5 Claims**



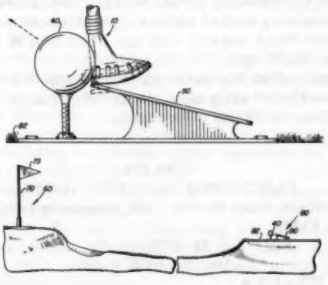
1. Target apparatus for pinball machines having an inclined playing surface, comprising a plurality of holes extending through said playing surface, said holes being aligned in a row whose one end is higher than its other end, a target in each said hole, each said target being upwardly extensible and downwardly retractable through its associated said hole, means to retract each said target through its associated hole upon the impact of a ball with the target, and guide means disposed at each side of and parallel to said row, said guide means supporting a said ball thereon spaced a distance above said playing surface.

4,260,157

GOLF GAME EQUIPMENT

Elby W. Jones, and Lawrence R. Phillips, both of 601 E. South Mountain Ave., D76, Phoenix, Ariz. 85040

Filed Jul. 30, 1979, Ser. No. 62,063
Int. Cl.³ A63B *69/36, 53/04, 57/00*
U.S. Cl. 273—177 R **6 Claims**



2. A game closely simulating the game of regulation golf to be played in a limited area and providing a variety of shots including driving, putting and chipping, said game to be played with the following:

(a) a ball having a diameter substantially greater than a conventional golf ball with a low density core and an outer covering; and

(b) a golf club comprising:

(i) a shaft with a grip area at one end; and

(ii) a head having an upper and lower surface, said head being secured to the other end of said shaft and including:

(A) a first ball striking surface at the forward edge of said club head, said first striking surface being generally vertical and extending between the upper and lower surface for driving and putting the said ball; and

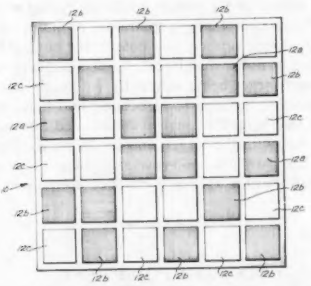
(B) a second ball striking surface, said second ball striking surface extending from the upper edge of the first striking area rearwardly and upwardly being arcuate in at least one dimension and further defining a plurality of transverse extending spaced-apart areas for imparting backspin to the ball and for achieving lofted shots.

4,260,158

APPARATUS FOR BOARD GAME

Christiaan F. Lohn, 5431 189th St. SW., Lynnwood, Wash. 98036

Filed Jun. 27, 1979, Ser. No. 52,674
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—267 **11 Claims**



1. A game apparatus comprising in combination:

a pair of dice, each die having R number of faces thereof marked with a first indicia, S faces thereof marked with a second indicia and T faces thereof marked with a third indicia and R+S+T=6;

a board divided into a plurality of object spaces, x of said object spaces being marked with said first indicia, y of said spaces being marked with said second indicia and z of said spaces being marked with said third indicia such that x:y:z::R:S:T; and,

a plurality of marker pieces adapted for selective placement on said board along the perimeter of said object spaces so as to surround said object spaces.

4,260,159

ELECTRONIC ROULETTE GAME

Jerzy Hoffman, Santa Monica, Calif., assignor to Tritech Corporation, Calif.

Filed Aug. 22, 1979, Ser. No. 68,676
Int. Cl.³ A63F *5/00*
U.S. Cl. 273—138 A **3 Claims**

1. An electronic roulette game comprising:

(a) 38 light emitting diodes (LEDs) positioned to simulate the 38 numbers on a roulette wheel and interconnected in a 4×10 matrix wherein:

the anodes of said LEDs are arranged in ten groups, the first through eighth of said anode groups each commonly connecting four anodes, and the ninth and tenth commonly connecting three;

the cathodes of said LEDs are arranged in four groups, the first, second and third of said cathode groups each commonly connecting ten cathodes, and the fourth commonly connecting eight; and

each of said first through eighth anode groups have first, second, third and fourth LEDs with cathodes connected, respectively, to said first, second, third and fourth cathode groups, and each of said ninth and tenth anode groups have first, second and third LEDs with cathodes connected, respectively, to said first, second and third cathode groups;

(b) a source of direct current;

(c) a switch adapted for momentary manual actuation coupled to said source;

(d) a pulse generator coupled to said switch, said pulse generator comprising:

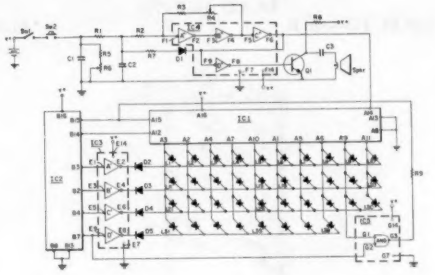
a voltage controlled oscillator;

an inverter coupled to the output terminal of said oscillator;

a feedback diode coupling the output terminal of said inverter through a coupling resistance to the input terminal of said oscillator; and

a control-voltage capacitance coupled through said coupling resistance to the input terminal of said oscillator;

(e) illuminating means coupled to said pulse generator for illuminating said 38 LEDs sequentially and repetitively, said illuminating means comprising:



a first counter coupled to said direct current source and having: first through tenth output terminals coupled, respectively, to said first through tenth anode groups; and a first clock terminal coupled to said pulse generator;

a second counter coupled to said direct current source and having: first through fourth output terminals coupled, respectively, to said first through fourth cathode groups so that when the anodes of any one of said anode groups are positively biased, only one LED in said one of said anode groups will conduct; a second clock terminal coupled to a carry terminal of said first counter; and a second reset terminal coupled to a first reset terminal of said first counter; and

an AND gate coupled to said direct current source and having: a first input terminal coupled to said ninth anode group; a second input terminal coupled to said fourth cathode group; and an output terminal coupled to said first and second reset terminals;

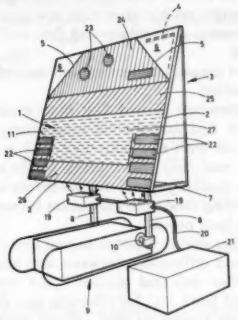
(f) means coupled to said pulse generator and to said switch for randomly terminating said repetitive sequential illumination while leaving one of said 38 LEDs illuminated, said one of said LEDs being randomly determined for each activation of said switch; and

(g) means coupled to said pulse generator for sounding said sequential illumination.

4,260,160
TARGET DEVICE FOR PRACTICE SHOOTING IN DARKNESS

Sture Ejnell, Kollered, and Börje Arrdal, Mölnlyeke, both of Sweden, assignors to Saab-Scania AB, Linkoping, Sweden

Filed Mar. 3, 1980, Ser. No. 126,293
Claims priority, application Sweden, Mar. 5, 1979, 7901927
Int. Cl.[3] F41J *1/08, 5/08*
U.S. Cl. 273—408 8 Claims



1. A target suitable for gunnery or similar practice in darkness with the use of a heat responsive sighting device, said target comprising

a substantially supple fabric attachable to a frame to be supported thereby in substantially flat condition with a front surface of the fabric facing towards a location from which practice firing takes place, said fabric being characterized by:

A. a heat absorbing sheet having low thermal capacity so as to undergo rapid rise in temperature in response to its absorption of radiation and which emits thermal radiation as a black body;

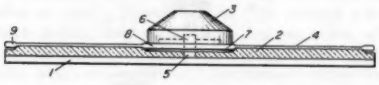
B. a protective sheet overlying the front surface of said heat absorbing sheet, said protective sheet being substantially transparent to thermal radiation; and

C. means interposed between portions of said heat absorbing sheet and said protective sheet to hold them in spaced apart substantially parallel relationship so that they define a heat insulating space in the fabric.

4,260,161
ARRANGEMENT FOR VIBRATIONLESS COUPLING OF A PHONOGRAPH RECORD WITH THE TURNTABLE OF A PHONOGRAPH

Reinhard Frank, Embühren, Fed. Rep. of Germany, assignor to Sound-Source International, Amstelveen, Netherlands

Filed May 9, 1979, Ser. No. 37,411
Claims priority, application Fed. Rep. of Germany, May 11, 1978, 7814262[U]
Int. Cl.[3] G11B *3/60*
U.S. Cl. 369—58 5 Claims

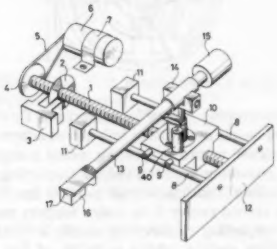


1. An arrangement for vibrationless coupling of a phonograph record with a turntable comprising: a turntable; a liner support placed on said turntable underneath the record; a center contact member placed over a centering pin of said turntable for loading said phonograph record by applying pressure thereto, said liner support being of acoustically inert material and having indentations beveled at rims of said liner, said indentations receiving thicker portions of said phonograph record; a record contact region for a modulated portion of said phonograph record increasing in thickness from inside towards outside of said turntable; said modulated portion only lying on said liner support; said center contact member pressing only on a portion of said record bearing a label, said vibrationless coupling being a two-part coupling comprising said liner support and said center contact member, said liner support having a substantially solid interior free of fluid containing cavities.

4,260,162
TONEARM CONTROL SYSTEM

Takashi Morii, and Junichi Kurata, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 26, 1979, Ser. No. 14,793
Claims priority, application Japan, Feb. 24, 1978, 53/20634
Int. Cl.[3] G11B *3/06*
U.S. Cl. 369—33 10 Claims



1. A tonearm drive control device for use in playing a record disk having bands of music separated by nonrecorded portions comprising:

a tonearm;

a reversible electric motor;

a vertical tonearm drive means for vertically moving a tonearm and horizontal tonearm drive means responsive to the rotation of said motor to horizontally move said tonearm;

first detecting means for detecting the position of said tonearm in a horizontal direction with respect to a predetermined reference position and generating a first output in response thereto;

second detecting means for detecting non-recorded portions of a record disk and generating a second output in response thereto;

first memory means receiving said first output from said first detecting means and said second output from said second detecting means and operating to store said first output therein in response to an occurrence of said second output;

selecting means for selecting desired music to be reproduced and generating a selection signal representative of an order of the selected music;

second memory means receiving said selection signal from said selecting means;

counter means for selectively counting said second output generated when said second detecting means detects a nonrecorded portion of said record disk which has not been previously detected;

first comparator means to compare the contents of said first memory means with said first output when said first output representative of an initial position of music to be reproduced has been stored in said first memory means; and

a second comparator means to compare the output of said counter means with the content of said second memory means where no first output representative of an initial position of one of said bands of music to be reproduced has been stored in said first memory means,

wherein said reversible electric motor and said tonearm drive means are controlled by the outputs of said first and second comparator means.

4,260,163

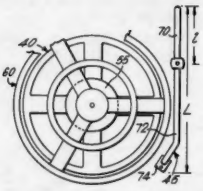
PHONOGRAPHIC SOURCE

Saad Z. M. Gabr, Canterbury, England, assignor to A.R.D. Technical Assistance and Engineering Services International Anstalt, Vaduz, Liechtenstein

Continuation of Ser. No. 962,030, Nov. 15, 1978, abandoned. This application May 8, 1980, Ser. No. 147,756

Int. Cl.³ G11B *3/60*

U.S. Cl. 369—266 **3 Claims**



1. A phonographic turntable comprising flywheel means, said flywheel means comprising hub means adapted to receive a rotational drive; record supporting means comprising a central portion providing a central record supporting surface, pin means upstanding from the central portion for reception in a phonograph record center hole, outer support means providing record supporting surfaces outwardly of said central record supporting surface, and a plurality of first arm means connecting together said central portion and said outer support means and exposing the ambient acoustic pressure a major portion of the underside of a phonographic record received on said supporting surfaces, and connecting means connecting together said flywheel means and said record supporting means, said flywheel means comprising a peripheral portion and a plurality of second spaced arm means connecting said hub means to said peripheral portion and exposing to ambient acoustic pressure a major portion of the underside of a phonographic record received on said supporting surfaces, said peripheral portion weighing more than said hub means and said second arm means together.

4,260,164

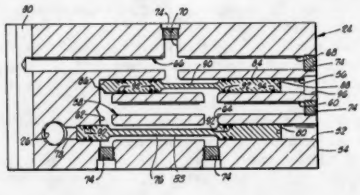
INFLATABLE PACKER ASSEMBLY WITH CONTROL VALVE

Eugene E. Baker, and Ernest E. Carter, Jr., both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 8,774, Feb. 2, 1979. This application Jun. 15, 1979, Ser. No. 48,977

Int. Cl.³ E21B *33/12*

U.S. Cl. 277—34 **14 Claims**



1. A control valve assembly for a downhole tool, said downhole tool being constructed for connection to a tubular member to be lowered into a well hole; comprising:

a mandrel;

a valve body, connected to said mandrel, said valve body including:

an inlet means for communicating with an interior of said tubular member;

an outlet means, for directing fluid to a component of said downhole tool which is to be actuated by said fluid;

a first bore means, disposed in said valve body, for communicating said inlet with an annular space between said tubular member and said well hole;

a second bore means, disposed in said valve body, for communicating with said annular space;

a first port means, connecting said first and second bore means; and

a second port means, connecting said second bore means and said outlet;

a first piston disposed in said first bore means, said first piston having first and second ends arranged for fluid communication with said inlet and said annular space, respectively, said first piston being movable between a first position blocking said first port means and a second position allowing fluid communication between said inlet and said first port means;

means for holding said first piston in said first position until a fluid pressure differential between said interior of said tubular member and said annular space reaches a first predetermined level, and for releasing said first piston so that it may be moved to said second position by said pressure differential when said differential reaches said first level;

a second piston disposed in said second bore means, said second piston having first and second ends arranged for fluid communication with said first port means and said annular space, respectively, said second piston being movable between a first position allowing fluid communication between said first and second port means and a second position blocking said second port means; and

means for holding said second piston in its said first position until said fluid pressure differential reaches a second predetermined level, said second level being higher than said first level, and for releasing said second piston so that it may be moved to its second position by said pressure differential when said differential reaches said second level.

4,260,165

SHAFT SEAL, INTENDED FOR USE AT HIGH TEMPERATURES

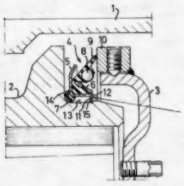
Nils M. Hartelius, Gothenburg, Sweden, assignor to AB Volvo, Gothenburg, Sweden

Filed Aug. 17, 1979, Ser. No. 67,520

Claims priority, application Sweden, Aug. 22, 1978, 7808857

Int. Cl.³ F16D *65/00*; F16J *15/32, 15/38*

U.S. Cl. 277—84 **5 Claims**



1. Shaft seal, intended to function at high temperatures and comprising a sealing ring of flexible material, which is arranged to form a seal between two elements rotatable relative to one another and which is mounted on a retainer ring with an essentially L-shaped cross section, characterized in that from the axial portion of the retainer ring, radially inwardly directed supports extend, which are disposed to be pressed against a radial supporting surface on a first one of the elements with the

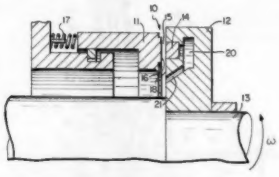
aid of a ring of elastic material disposed between the retainer ring and a second opposing support surface on said first element.

4,260,166

SELF-STABILIZING RADIAL FACE SEAL

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Izhak Etsion, Haifa, Israel

Filed Nov. 17, 1978, Ser. No. 961,832
Int. Cl.³ F16J *15/34*
U.S. Cl. 277—96 **7 Claims**



1. In a radial face seal between high-pressure and low-pressure regions of fluid along an axial member having a primary seal ring for sealably engaging a seal seat wherein at least one of said primary seal ring and seal seat is affixed to said axial member so as to rotate therewith and said primary seal ring has an annular front face spaced from a mating face of said seal seat by a narrow gap during rotation, the improvement comprising

a porous, ring-like circumferential structure mounted in said seal seat and having a face opposite the annular front face of said primary seal ring substantially coplanar with the mating face of said seal seat whereby fluid is transferred through said porous structure from said high-pressure region into said low-pressure region during rotation thereby reducing the asymmetry of the circumferential pressure distribution so that the seal is stabilized under both hydrostatic and hydrodynamic conditions, and

resilient biasing means for moving said primary seal ring into contact with said seal seat when said axial member is stationary whereby said annular front face simultaneously sealably engages said mating surface of said seat and said coplanar face of said porous structure thereby inhibiting said fluid transfer therethrough.

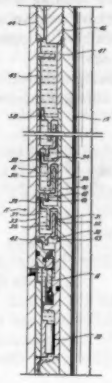
4,260,167

WELL DRILLING TOOL

Fred K. Fox, Houston, Tex., assignor to Engineering Enterprises, Inc., Houston, Tex.

Filed Sep. 4, 1979, Ser. No. 71,797
Int. Cl.³ F16J *15/34, 15/40*
U.S. Cl. 277—135 **26 Claims**

1. A well drilling tool, comprising a body connectible as part of a well string and including inner and outer members which define an annular space between them through a portion of which drilling fluid is circulated, bearing means within the space supporting one member for rotation with respect to the other, means sealing between the members within the annular space above the bearing means, a bottom wall extending laterally inwardly from the outer member and having an inner end which terminates close the the inner member, and an annular side wall extending upwardly from the inner end of the bottom wall to form an annular bucket between it and the outer member and a narrow annular passageway between it and the inner member which connects the annular space above the bucket with the annular space therebelow, said bucket containing a body of material which acts as a liquid under drilling conditions and which (1) has a specific gravity sufficiently greater than that of the drilling fluid, and (2) is sufficiently insoluble



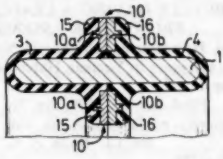
with the drilling fluid, that it substantially excludes drilling fluid from the sealing means.

4,260,168

SEALING RING

Lennart G. Berg, Diagnosvägen 4B, 2 tr., S-14154 Huddinge, Sweden

Filed Jul. 6, 1979, Ser. No. 55,274
Int. Cl.³ F16J *15/12*
U.S. Cl. 277—225 **12 Claims**



1. A sealing ring with an annular, at least substantially stiff core and a sheath of elastic sealing material surrounding it, the sheath being glidable on the core, whereby the sheath might roll about the core, the sheath being comprised of at least one annular part with an internal space adapted to the cross section of the core, the sheath being discontinuous circumferentially around the core along an annular pathway spaced in from the sides of the ring, the sheath having circumferential portions which meet along the path where the sheath is discontinuous, the sheath being attached around the core by means of a mutual connection at the circumferential portions, the mutual connection of the circumferential portions of the sheath being provided by at least one annular fastening member which is concentric with the core and is made of a harder material than the sheath material, the fastening member being in mutual engagement with the circumferential portions for keeping them together and for stiffening them.

4,260,169

KEYLESS CHUCK

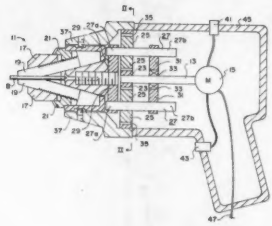
Robert L. Hall, 1770 Brookside Dr., Germantown, Tenn. 38138

Filed Nov. 29, 1979, Ser. No. 98,661
Int. Cl.³ B25B *13/44*; B23B *31/06*
U.S. Cl. 279—62 **11 Claims**

1. An improved drill chuck of the type including a body member for being rotatably associated with a rotary shaft of a drive motor, including a plurality of threaded jaw members

movably attached to said body member for rotation therewith, and including a screw ring member associated with said jaw members for normally rotating with said jaw members, rotation of said jaw members relative to said screw ring member causing said jaw members to open and close, wherein the improvement comprises:

(a) a sun gear for being attached to said rotary shaft of said drive motor for rotation therewith;



(b) planetary gear means associated with said sun gear, said planetary gear means including a planetary gear member for being attached to said body member and for rotation with said sun gear to cause said body member to rotate; and

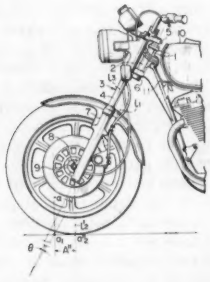
(c) ring gear means associated with said planetary gear means for being attached to said screw ring member and for preventing said screw ring member from rotating with said jaw members when substantial resistance is applied to said ring gear means to hinder rotation thereof.

4,260,170

MOTORCYCLE HAVING A LEADING AXLE TYPE FRONT FORK ASSEMBLY

Kazuo Terai, Hamamatsu, and Takeshi Nagase, Shizuoka, both of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jun. 20, 1979, Ser. No. 50,502
Claims priority, application Japan, Jun. 24, 1978, 53-77120
Int. Cl.³ B62K *21/02*
U.S. Cl. 280—276 **2 Claims**



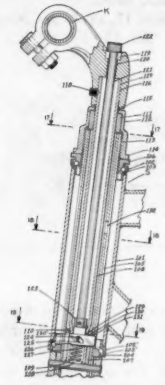
1. Motorcycle comprising a frame, a front fork assembly having a front side and a lower end portion and mounted on the frame through a steering head which connects the front fork assembly to the frame for steering movement about a steering axis which is inclined rearwardly with respect to a vertical line to define a caster angle, a front wheel mounted on the front fork assembly through a front axle, said front fork assembly being inclined rearwardly with respect to a vertical line by an angle smaller than the caster angle, said front axle being located along the front side of and above the lower end portion of the front fork assembly so that the front axle is connected with the front fork assembly axially above the lower end thereof.

4,260,171

BICYCLE HANDLEBAR ADJUSTMENT ASSEMBLY

Edwin E. Foster, 1801 Camp Craft Rd., Austin, Tex. 78746

Filed Jan. 8, 1979, Ser. No. 1,443
Int. Cl.³ B62K *21/22*; B62D *1/18*; G05G *5/06*
U.S. Cl. 280—279 **3 Claims**



1. For use with a bicycle having a frame incorporating a vertically presented head tube, a stem, and handlebars engaged to said stem, a handlebar height adjustment assembly comprising a vertically presented stem tube engaged in the upper portion thereof to said stem and projecting downwardly therefrom into said head tube and being of relatively reduced diameter and coaxially with respect thereto for axially reciprocal shiftable movement relative to said head tube, said stem having a passage communcating with the interior of said stem tube, a control rod extending downwardly through said stem passage into said stem tube, a fork tube fixed within said head tube in coaxial and surrounding relationship to said stem tube, said fork tube being of multi-splined configuration, a sliding head disposed inwardly of said head tube, said sliding head being rigid on the lower end portion of said stem tube and being contoured complementarily to the fork tube spline configuration for being matingly engageable therewith whereby relative rotative movement between said fork tube and said stem tube is inhibited, a cross pin carried on said control rod in its lower end portion, a latch arm having its longitudnal axis perpendicular to the axis of said cross pin carried on said pin by means of an opening in said arm through which the said pin extends, said latch arm extending transversely of said stem tube, and means for selectively engaging said latch arm through operation of said control rod with said fork tube for presenting and maintaining said handlebars in predetermined vertical relationship with respect to said head tube.

4,260,172

IMPLEMENT TRANSPORT SYSTEM

Vernon E. Rettig, Bondurant, and John R. Myers, Polk City, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jun. 22, 1979, Ser. No. 51,302
Int. Cl.³ B60D *1/14*
U.S. Cl. 280—411 A **35 Claims**

1. For a plurality of implements having forwardly extending towing connections, an implement transporting device for towing the implements in substantially a side-by-side fashion forwardly through a field and for towing the implements endwise during transport comprising:

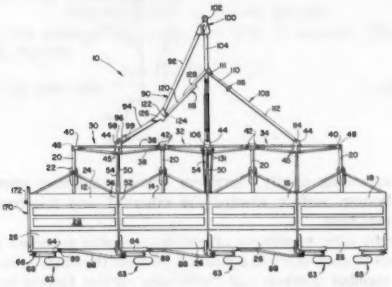
a plurality of truss members extending substantially trans-

versely to the forward towing direction, each member having opposite ends connected to an adjacent pair of the towing connections, whereby the truss members transversely space the implements;

means for pivotally connecting adjacent ends of the turss members and permitting the towing connections to move up and down with respect to each other;

means connected between adjacent implements for maintaining fore-and-aft alignment of the implements;

a hitch beam adapted for attachment to the towing vehicle and pivotally connected to an endmost truss member for pivoting between a forwardly extending field-working position for pulling the implements forwardly through the



field, and a sideways transport position wherein the hitch beam extends outwardly beyond an endmost implement for pulling the implements in an endwise manner; and

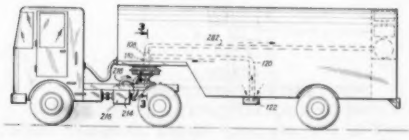
a plurality of wheel assemblies connected near the rear of the implements for raising and lowering the implements between first and second positions, the assemblies including wheels having substantially horizontal axes of rotation extending in the forward direction wherein in the first position the wheels are lowered against the ground to raise the implements for transportation in the endwise direction and in the second position the wheels are raised above the ground to allow the implement to contact the ground and move forwardly in the field-working position.

4,260,173

LIQUID FIFTH WHEEL ASSEMBLY INCLUDING DUAL CONCENTRIC PIPING STRUCTURE

Herman Kornahrens, West Islip, N.Y., assignor to Garsite Products, Inc., Deer Park, N.Y.

Filed Mar. 9, 1979, Ser. No. 19,265
Int. Cl.[3] B60D *1/08*
U.S. Cl. 280—421 **39 Claims**



1. In a tractor and a fluid containing trailer combination having a fifth wheel assembly substantially entirely secured to the front underside of the trailer during separation and connection of the trailer tractor and during operation of said tractor and said trailer combination in conjunction with a utilization device, the improvement comprising

housing means mounted within the fifth wheel assembly and coupled to the trailer,

fluid inlet and fluid outlet means disposed within said housing means and in communication with said trailer,

a bore through said housing,

a length of pipe having inlet and outlet means,

said pipe extending through said bore in said housing and defining, in combination with said bore, an annular flow chamber for the passage of fluid from said housing inlet means to said housing outlet means,

pump means having suction and discharge sides,

first hose means for fluidly coupling said housing outlet means to said suction side of said pump means,

second hose means for fluidly coupling said discharge side of said pump means to said inlet means of said pipe, and

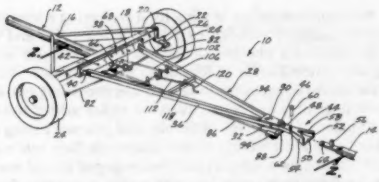
third hose means adapted for fluidly coupling said pipe outlet means to the utilization device.

4,260,174

HITCH APPARATUS FOR A STEERABLE TOWED VEHICLE

Charles A. Lavens, Rte. 1, 2345 E. 275 Rd., Oglesby, Ill. 61348

Continuation-in-part of Ser. No. 877,027, Feb. 10, 1978, abandoned. This application Feb. 12, 1979, Ser. No. 11,449
Int. Cl.[3] B60D *1/02*; B62D *13/04*
U.S. Cl. 280—444 **17 Claims**



16. A hitch apparatus for a vehicle having a frame and a pair of spaced-apart wheel means supported on the frame for pivotal steering movement, said hitch apparatus comprising:

an elongate tongue having forward and rearward ends,

means for connecting the rearward end of the tongue to the frame for pivotal movement about a generally horizontal axis,

a coupling pivotally connected to the forward end of the tongue for turning movement about an upright pivot axis,

means for rigidly connecting said coupling to a towing vehicle,

an elongated steering rod,

means for pivotally connecting one end of said steering rod to said coupling, and

means for pivotally connecting the other end of said steering rod to said wheel means for pivotal steering movement of said wheel means in response to pivotal turning movement of said coupling,

said means for pivotally connecting one end of the steering rod to said coupling including steering lever means associated with said coupling for fore and aft pivotal movement in response to pivotal turning movement of said coupling,

said one end of the steering rod being pivotally connected to said steering lever means,

said means for pivotally connecting the other end of the steering rod to said wheel means including:

a tie rod actuator,

means for supporting said tie rod actuator adjacent said rearward end of the tongue for pivotal movement about an upright axis, and

tie rod means pivotally connected between said tie rod actuator and said wheel means for pivotal steering movement of said wheel means in unison in response to pivotal movement of the tie rod actuator,

said other end of the steering rod being pivotally connected to said tie rod actuator for pivotally moving said actuator in response to pivotal turning movement of said coupling,

and said tie rod actuator being supported on said tongue so

as to be pivotally movable with said tongue about said horizontal axis.

4,260,175

SAFETY BINDING ADAPTED TO BE MOUNTED ON A SKI

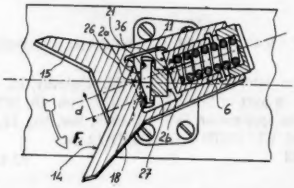
Georges P. J. Salomon, Annecy, France, assignor to Etablissements Francois Salomon and Fils, Annecy, France

Filed Nov. 28, 1978, Ser. No. 964,205

Claims priority, application France, Mar. 22, 1978, 78 08342

Int. Cl.³ A63C 9/085

U.S. Cl. 280—629 **8 Claims**



1. An improved safety binding for a ski having a longitudinal plane of symmetry comprising a jaw having a rear end which is engagable with one end of the sole of a ski boot; a casing integrally extending in a forward direction from said jaw; support means connectible to said ski and providing two lateral support lines disposed respectively on either side of the longitudinal plane of symmetry of the ski; said jaw and casing defining a bore, said jaw having a front transverse face; said support means comprising a support member engaged in said bore and having a front transverse face and a rear transverse face opposed to the front transverse face of the jaw, the front transverse face of the jaw and the rear transverse face of the support member including projections and the other transverse face having recesses receiving said projections for defining said support lines to permit relative movement between said jaw and said support member, resilient means located in said bore for acting on the front transverse face of the support member and on said jaw to urge said projections into said recesses to cause the jaw to pivot on either line of support, the lines of support viewed along the longitudinal axis of the ski, as converging toward a point disposed above the ski whereby in a first direction of lateral movement of the jaw, the jaw will pivot about one line of support and in a second direction of lateral movement of the jaw, the jaw will pivot about a second line of support, said resilient means being further defined by a pressure member bearing upon the front transverse face of said support member and a spring engaging said pressure member and said casing; said improvement comprising: providing said support member on its front transverse face, with at least two lines of reaction converging downward towards the ski and having on its rear transverse face at least two lines of reaction converging upwards, whereby, as the jaw is distant from the central position, causing the line of support of said jaw and casing and the lines of reaction in response to the movement of said pressure member, to be respectively located on either side of the longitudinal plane of symmetry on the ski.

4,260,176

WHEEL SUSPENSION STRUT

Arnold F. Pacis, Orchard Lake, and Ralph A. Youngdale, Union Lake, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Jan. 15, 1979, Ser. No. 3,319

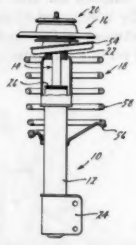
Int. Cl.³ B60G 11/52

U.S. Cl. 280—668 **8 Claims**

1. In a suspension strut for an independent wheel suspension system of an automotive vehicle, the strut being of the type having two relatively telescopable members, one securable to a fixed portion of the vehicle and the other securable to a wheel of the vehicle, an improved jounce bumper assembly comprising:

A. a rigid stop member carried axially fast in surrounding relationship with one of said telescopable members and having a bottom surface juxtaposed with an upper surface of said other telescopable member; and

B. a resilient cushion member bonded to said stop member in surrounding relationship and having a cushioning portion



extending axially therefrom beyond said stop member bottom surface toward the other of said telescopable members;

whereby after movement of said telescopable members with respect to each other to a position wherein the other telescopable member contacts said cushioning portion further movement is resiliently retarded until said other telescopable member upper surface directly contacts said stop member bottom surface whereupon movement substantially ceases.

4,260,177

MOUNTING ARRANGEMENT FOR INDEPENDENT FRONT WHEEL SUSPENSION OF MOTOR VEHICLES

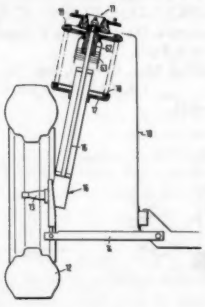
Rolf Pflughaupt, Rüsselsheim; Willi Arnold, Nauheim, and Gerhard Hellener, Ginsheim-Gustavsburg, all of Fed. Rep. of Germany, assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 7, 1979, Ser. No. 46,163

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1978, 7818309[U]

Int. Cl.³ B60F 11/16

U.S. Cl. 280—668 **9 Claims**



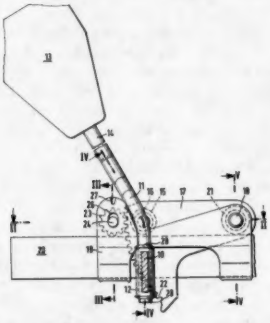
1. In a mounting arrangement for an independent front wheel suspension for motor vehicles, having a support strut including a telescopic shock absorber and a coiled spring enclosing the latter, and serving as a wheel spring, wherein an end of the piston rod of the telescopic shock absorber, either alone or together with an upper wheel spring plate, is resiliently supported at the vehicle body by an annular elastomeric element of the mounting arrangement, the improvement com-

prising: said annular elastomeric element having substantially axially aligned recess means in at least one of its two end faces for improved cardanic movability, said axially aligned recess means being approximately slot shaped in section and of expanded shape at the interior of the elastomeric element.

4,260,178
ANCHORAGE AND BUCKLES FOR SAFETY BELTS ARRANGED IN VEHICLES

Bernd Klüting, Radevormwald, Fed. Rep. of Germany, assignor to Keiper Automobiltechnik GmbH & Co. KG, Remscheid, Fed. Rep. of Germany

Filed Dec. 6, 1979, Ser. No. 101,058
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1978, 2853263
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—804 **8 Claims**



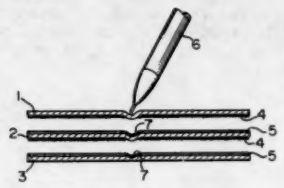
1. Anchoring means for safety belt buckles in a vehicle, particularly for safety belts arranged in a motor vehicle and extending over vertically and longitudinally adjustable motor vehicle seat, comprising: a guiding member attached to the belt and a holding member attached to the body of the vehicle and being engageable with said guiding member, a gear segment pivotably supported on said guiding member; a pinion in mesh with said gear segment and supported for rotation and for a radial displacement on said guiding member; an arresting member fixedly arranged on said guiding member in proximity to said pinion for engaging the same and thus arresting said gear segment when the latter is subject to a jerking movement and radially displaces said pinion; and a releasable adaptor connecting said buckle to said seat in a fixed relative position.

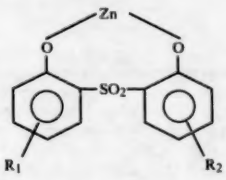
4,260,179
COLOR-DEVELOPING SHEET FOR PRESSURE-SENSITIVE RECORDING SHEETS

Akihiro Yamaguchi; Tadashi Kobayashi, both of Yokohama; Keizaburo Yamaguchi, Kawasaki; Kisuke Osawa; Hisamichi Murakami, both of Yokohama; Noboru Yamato, and Akira Hasegawa, both of Tokyo, all of Japan, assignors to Mitsui Toatsu Chemicals Inc. and Jujo Paper Co. Ltd., both of Tokyo, Japan

Filed Aug. 22, 1979, Ser. No. 68,581
Int. Cl.³ B41M *5/16, 5/22*
U.S. Cl. 282—27.5 **11 Claims**

1. A color-developing sheet for pressure-sensitive recording sheets, said color-developing sheet comprising a base sheet and associated therewith a color-developing agent comprising at least one 2,2'-bisphenolsulfone zinc salt selected from the group consisting of compounds of the following formula





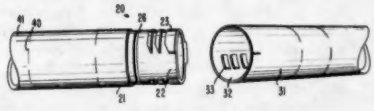
(I)

wherein R_1 and R_2 are identical or different, and represent a hydrogen atom, a halogen atom, an alkyl group containing 1 to 10 carbon atoms, a cycloalkyl group containing 3 to 10 carbon atoms, an aralkyl group containing 7 to 11 carbon atoms, or a phenyl group.

4,260,180
MECHANICAL COUPLING

Roman A. Halushka, Santa Monica, and George A. McGowan, Westminster, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Jul. 23, 1979, Ser. No. 59,795
Int. Cl.³ F16L *55/00*
U.S. Cl. 285—9 M **3 Claims**



1. A mechanical coupler comprising:

a first non-magnetic cylindrical section having an inner and an outer surface, said outer surface having an interrupted screw portion thereon;

a permanent magnet disposed in one end of said first section at the bottom of a first cylindrical chamber adjacent to said interrupted screw portion;

a second non-magnetic cylindrical section having an inner and an outer surface, said inner surface having interrupted screw portion thereon for reciprocally mating with the interrupted screw portion of said first section and locking by a fraction of a turn thereof; and

a movable magnetic plunger captively disposed in one end of the second section in a second cylindrical chamber, said plunger being slidably disposed therein, said plunger being free to enter said first cylindrical chamber when said second section is aligned with and locked relative to said first section by said fraction of a turn thereof, thereby preventing further relative rotation between said first and second sections.

4,260,181

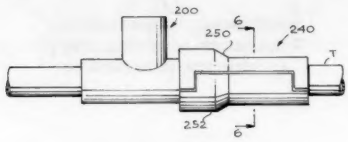
PIPE COUPLING

Hoyt S. Curtin, 3706 Capstan Cir., Westlake, Calif. 91361

Continuation-in-part of Ser. No. 695,462, Jun. 14, 1976, Pat. No. 4,109,944. This application Aug. 28, 1978, Ser. No. 937,137

Int. Cl.[3] **F16L** *13/10, 21/06, 47/00*

U.S. Cl. 285—15 **4 Claims**



1. A device suitable for being adhered directly to first and second pipes having outer surfaces intended to be of predetermined first and second diameters, respectively, said pipes having open ends spaced by less than a predetermined distance to form a water-tight seal therebetween, said device comprising:

first and second pipe sections each comprised of a substantially semi-cylindrically shaped wall having inner and outer circumferential surfaces, each of said pipe sections including a portion of reduced wall thickness adjacent a first longitudinal edge thereof extending radially inwardly from said outer circumferential surface and a portion of reduced wall thickness adjacent a second longitudinal edge thereof extending radially outwardly from said inner circumferential surface whereby said first and second pipe sections can be mated with their longitudinal edges opposed around said pipes to form a cylinder with the reduced thickness wall portions of each section having surfaces overlapping surfaces on the reduced thickness wall portions of the other section so that said overlapping surfaces can be adhered to one another to form a water-tight seal therebetween, the degree of overlapping being dependent upon the extent to which the actual diameters of said pipes differ from said predetermined diameters;

each of said pipe sections further including at least two lugs substantially of said substantially uniform wall thickness spaced longitudinally by a distance greater than said predetermined distance and formed integral with said wall extending circumferentially beyond one of the longitudinal edges thereof, each lug having a mating surface projecting circumferentially from and perpendicular to the longitudinal edge from which the lug extends;

each of said pipe sections further including at least two notches spaced longitudinally in alignment with said lugs and extending circumferentially inwardly from the other of said longitudinal edges, each notch having a mating surface projecting circumferentially from and perpendicular to the longitudinal edge from which the notch extends, said lug and notch mating surfaces being oriented to remain contiguous to one another for varying degrees of said overlapping whereby said mating surfaces can be adhered to one another to form a water-tight seal and prevent a leak along the opposed longitudinal edges of said pipe sections;

each of said pipe section wall inner surfaces having an inner diameter at a first end thereof substantially equal to the outer diameter of said first pipe and an inner diameter at a second end thereof substantially equal to the outer diameter of said second pipe;

each of said pipe sections further including at least first and second longitudinally spaced thin flanges formed on the wall inner surface thereof and projecting radially inwardly therefrom.

2. A device suitable for being adhered directly to an emplaced pipe having a first outer surface intended to be of predetermined diameter and an emplaced coupling having a second outer surface intended to be of predetermined diameter, said pipe and coupling having open ends spaced by less than a predetermined distance, to form a water-tight seal therebetween, said device comprising:

first and second pipe sections each comprised of a wall of substantially semi-cylindrical cross-section having first and second longitudinal edges and an outer circumferential surface extending from said first edge to a first shoulder extending substantially parallel to and spaced from said second edge and an inner circumferential surface for adhesion directly to said pipe and coupling extending from said second edge to a second shoulder extending substantially parallel to and spaced from said first edge, said wall being of substantially uniform thickness between said first and second shoulders and of reduced thickness between said first shoulder and said second edge and between said second shoulder and said first edge;

each of said pipe sections further including at least two lugs substantially of said substantially uniform wall thickness spaced longitudinally by a distance greater than said predetermined distance and formed integral with said wall extending circumferentially beyond one of the longitudinal edges thereof, and at least two notches formed in said wall extending circumferentially inwardly from the other longitudinal edge thereof;

said lugs and notches being longitudinally aligned whereby said first and second pipe sections can be mated to one another and around said pipe and coupling with their longitudinal edges opposed and with the lugs of each section received in the notches of the other section and with the reduced thickness wall portions of each section having surfaces overlapping surfaces on the reduced thickness wall portions of the other section so that said overlapping surfaces can be adhered to one another to form a watertight seal therebetween, the degree of overlapping being dependent upon the extent to which the actual diameters of said pipe and coupling differ from said respective predetermined diameters, each of said lugs having a mating surface projecting circumferentially beyond and substantially perpendicular to the longitudinal edge from which the lug extends and each of said notches having a mating surface projecting circumferentially inwardly from and substantially perpendicular to the longitudinal edge from which the notch extends, said lug and notch mating surfaces being oriented so as to remain substantially in contact with one another for varying degrees of said overlapping whereby said mating surfaces can be adhered to one another to form a watertight seal and prevent a leak along the opposed longitudinal edges of said pipe sections;

each of said pipe section wall inner surfaces having an inner diameter at a first end thereof substantially equal to the outer diameter of said pipe and an inner diameter at a second end thereof substantially equal to the outer diameter of said coupling.

4,260,182

COMPRESSION FITTING

Rodney J. Bruner, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 5, 1979, Ser. No. 100,657

Int. Cl.[3] **F16L** *19/08*

U.S. Cl. 285—23 **5 Claims**

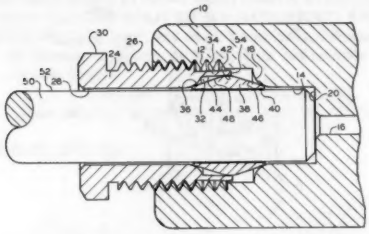
1. In a two-piece compression fitting,

a driving screw having an inner through bore and a recess in one end defined by a thin-wall cylindrical portion and a driving portion spaced inwardly from an outer-most edge of said cylindrical portion;

a symmetrical sleeve having an inner through bore of substantially the same diameter as that of said driving screw, a cylindrical central portion, and sloping surfaces extending downwardly from said central portion;

said central portion of said sleeve having a diameter slightly larger than the diameter of an inside wall of said cylindrical portion of said screw; and

one of said sloping surfaces of said sleeve being cooperative with said outermost edge of said cylindrical portion of said screw, when said screw and sleeve are pressed together and said inner bores of said screw and sleeve are



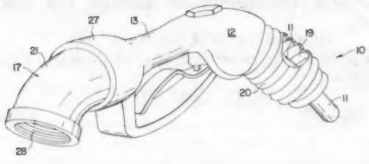
co-axially aligned, for forcibly increasing said diameter of said inside wall to said diameter of said central portion of said sleeve whereby said sleeve is pressed into said recess of said screw and is retained in co-axial alignment therein by said inside wall of sid cylindrical portion of said screw.

4,260,183

PUMP HOSE SWIVEL CONNECTION

Carroll P. Krupp, Akron, Ohio, assignor to The B.F. Goodrich Company, Akron, Ohio

Filed Jan. 12, 1979, Ser. No. 2,913
Int. Cl.[3] F16L *39/04*
U.S. Cl. 285—134 **8 Claims**



1. A swivel coupling for interconnecting a gasoline dispensing nozzle member with a coaxial hose comprising a pair of concentric rigid conduits, one of said conduits being an outer conduit and the other one of said conduits being an inner conduit, a spider interconnecting the one end of said conduits, said outer conduit cooperative with said inner conduits to define an annular passageway for conveying vapors from said nozzle to said coaxial hose, said spider having a plurality of circumferentially spaced passageways for communicating with said annular passageway, the other ends of said rigid conduits being formed into a pair of elbows, said elbows having the central axes of said ends of said conduits subtending an obtuse angle relative to each other, the inner periphery of said other end of said outer conduit being threaded, and means interconnecting said one end of said conduit to said gasoline dispensing nozzle member to permit relative rotation therebetween but prevent axial movement therebetween.

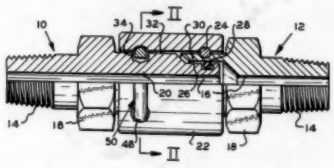
4,260,184

FLUID COUPLING USING STAPLE INTERLOCK

Thomas H. Greenawalt, Van Wert, and Daniel E. Kimmet, Delphos, both of Ohio, assignors to Aeroquip Corporation, Jackson, Mich.

Filed Jan. 18, 1979, Ser. No. 4,363
Int. Cl.[3] F16L *37/14*
U.S. Cl. 285—305 **4 Claims**

1. In a fluid coupling having a pair of coaxial tubular parts interconnected by a staple capable of accommodating a variety of staple cross section configurations and wherein one part comprises a male member having an longitudinal axis and an annular locking groove and the other part comprises a female member having a cylindrical staple receiving bore aligned with said locking groove when said parts are fully mated whereby a staple inserted in said bore is received within said groove to interlock said parts, the improvement comprising said groove having flat, spaced, opposed, radially extending sides defining the groove axial dimension and a base surface consisting of cylindrical surfaces defined adjacent and intersecting each side



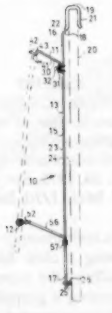
and an annular concave arcuate portion intermediate and intersecting said cylindrical surfaces of lesser axial dimension than the width of conventional square cross section staples whereby the bore and groove will accomodate U-shaped staples of square, circular and D configuration cross section wherein the convex surface of D configuration cross section staples comprises the staple outer surface and a square configuration cross section staple will engage said cylindrical surfaces.

4,260,185

MACRAME DEVICES

Lewis D. Shiplee, III, 1112 S. Magnolia Dr., Apt. V-204, Tallahassee, Fla. 32301

Filed Jul. 6, 1979, Ser. No. 55,342
Int. Cl.[3] D04G *5/00*; B65H *69/01*
U.S. Cl. 289—16.5 **6 Claims**



1. A macrame device comprising a rigid support component, a macrame cord holder mounted on and supported by said component, and convoluted cord retaining means for releasably clasping macrame cords, said retaining means being offset from said cord holder and being mounted on and supported by said component, and said retaining means comprising an elongated coiled element with coils arranged and centered along an arcuate axis so that the coils are contiguous at one side of the coil arrangement and spaced apart at the diametrically opposite side of the coil arrangement.

4,260,186

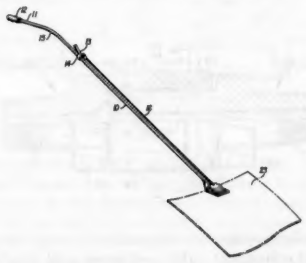
DEVICE FOR HANDLING OIL LADEN PAD

William A. Sky-Eagle, Jr., 1038 Meadowbrook Dr., Corpus Christi, Tex. 78412

Filed Nov. 19, 1979, Ser. No. 95,568

Int. Cl.³ A47F *13/06*

U.S. Cl. 294—19 R **4 Claims**



1. A device for grasping an oil sorbent pad comprising an elongated support member, a stationary plate member fixed to said support member near said support member's first end and projecting forwardly from that end of the support member, a pivotable plate member hinged along one edge to said end of the support member and having its opposite edge resting on the first plate member with an enclosed acute angle between the pivotable and stationary plate members, a lever mounted on the support member where it is accessible to a person holding said support member, a control cable attached at one end to the pivotable plate member and at its opposite end to said lever for responding to movement of the lever to alternately place the cable under tension and to pivot the pivotable plate member away from the stationary plate member to provide space therebetween for an oil sorbent pad, and to release tension on the cable to release the pivotable plate member for movement towards the first plate, and means for biasing the second plate member towards the first plate member.

4,260,187

TERMINAL GUIDANCE SENSOR SYSTEM

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Antal K. Bejczy, Pasadena, Calif.

Filed Mar. 23, 1979, Ser. No. 23,439

Int. Cl.³ B66C *1/10*; B64G *1/62*

U.S. Cl. 294—86 R **4 Claims**

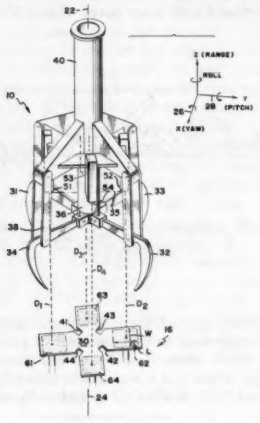
1. A guidance system comprising:

a first element forming a claw having four hook means arranged substantially at the corners of a square;

a second element forming a grappling fixture having four strikers with portions arranged substantially along the corners of a first square for engagement by said hook means;

four distance sensing means for sensing the distance between each of four locations on said first element and each of four corresponding locations on said second element, the locations on said second element being arranged at the corners of a second square rotated about 45° from the orientation of said first square; and

element turning means responsive to the difference in distance sensed by each pair of distance sensing means which correspond to the locations at opposite corners of said second square, for turning one of said elements about an



axis which extends largely perpendicular to an imaginary line connecting the pair of opposite corners.

4,260,188

HOOP ARRANGEMENT FOR FOLDABLE TOPS OF AUTOMOTIVE VEHICLES

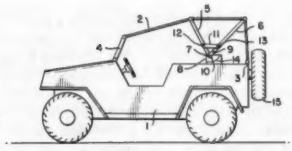
Theodor Bauer, Altenriet, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Jun. 11, 1979, Ser. No. 47,080

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1978, 2825526

Int. Cl.³ B60J *7/12*

U.S. Cl. 296—107 **5 Claims**



1. A hoop arrangement for a foldable top of a motor vehicle, the hoop arrangement comprising a bow-shaped main hoop connected to the foldable top, means for pivotably mounting the main hoop at respective sides of the vehicle, and a bow-shaped corner hoop means provided at the top and adapted to be spaced from the main hoop for tightening the foldable top at an outermost corner thereof when the top is in a closed position, the improvement comprising crank means for connecting respective free ends of the corner hoop means to the mounting means of the main hoop, said crank means being pivotably connected to the corner hoop means and the main hoop mounting means, guide arm means for connecting the main hoop to the corner hoop means, joint means disposed at a position spaced from the crank means for pivotably connecting a first end of the guide arm means to the corner hoop means, means for pivotably connecting a second end of the guide arm means to the main hoop at a position spaced from the main hoop mounting means, and guide means including a curved guide surface having an ascending slope in a direction pointing away from the main hoop mounting means and adapted to cooperate with said joint means at least when the foldable top is almost

open for positively guiding a movement of the main hoop and corner hoop means during an opening and closing of the foldable top.

4,260,189

DEVICE FOR CLOSING A SLIDABLE ELEMENT SUCH AS A SLIDING ROOF OF AN AUTOMOBILE VEHICLE

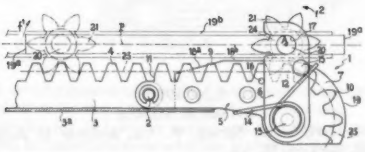
Pierre Periou, Clergy, and Marc Rampignon, Villemomble, both of France, assignors to Compagnie Industrielle de Mecanismes, France

Filed Jun. 28, 1978, Ser. No. 919,782

Claims priority, application France, Jul. 11, 1977, 77 21260

Int. Cl.³ B60J *7/04*

U.S. Cl. 296—223 **10 Claims**



1. A device in combination with an element which is guidably mounted on a structure to be movable relative to the structure in a given substantially rectilinear longitudinal direction to an end position by means of said device, said device comprising a spindle for connection to spindle rotating means and extending transversely of said direction and rotatively mounted on said element, a driving gear pinion fixed on said spindle, a toothed rack fixed relative to said structure and extending in a direction parallel to said longitudinal direction, a toothed member extending said end of the rack and having a set of teeth having a curved convex portion remote from the rack and a substantially rectilinear portion adjacent the rack, the pinion being meshed with and rollable along the rack onto said substantially rectilinear portion and said curved convex portion of the toothed member to reach an end of said curved convex portion remote from the rack when said element reaches said end position, means for allowing at least one of two members consisting of the pinion and said toothed member to move relative to the rack transversely of said substantially rectilinear longitudinal direction while the pinion is meshed with said curved convex portion and thereby bringing said curved convex portion sufficiently interposed between the pinion and the rack that the pinion is prevented by said curved convex portion from moving toward the rack when said spindle is not driven in rotation by said spindle rotating means, and means for constraining the pinion and said curved convex portion to remain meshed from the moment when the pinion reaches said curved convex portion until said element reaches said end position.

4,260,190

HINGE FITTINGS

Ian P. Holloway, Penkridge, and Raymond A. Lloyd, Great Wyrley, both of England, assignors to H. R. Turner (Willenhall) Limited, West Midlands, England

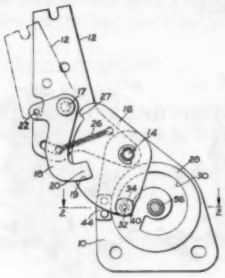
Filed Feb. 6, 1978, Ser. No. 875,514

Claims priority, application United Kingdom, Feb. 5, 1977, 4793/77

Int. Cl.³ A47C *1/024*

U.S. Cl. 297—361 **12 Claims**

1. A hinge fitting comprising first and second hing parts connected pivotally to one another and an adjustment plate mounted on the first hinge part for turning movement about an axis parallel to the hinge axis, the adjustment plate being provided with a slot which extends in spiral fashion about the rotational axis of the plate and which receives a projection provided on the second hinge part whereby the angular relation between the hinge parts varies in response to turning movement of said plate, the adjustment plate being supported by a reaction member over at least part of its periphery in the vicinity of said projection, the reaction member also being mounted on said first hinge part, whereby loads are transmitted



from said projection to the reaction member through that portion of the adjustment plate which lies radially outwardly of the slot without creating any substantial stresses in that portion of the adjustment plate.

4,260,191

METHOD AND APPARATUS TO CONTROL TENSION IN A TRAILING CABLE AND/OR WATERHOSE FOR A MINING MACHINE

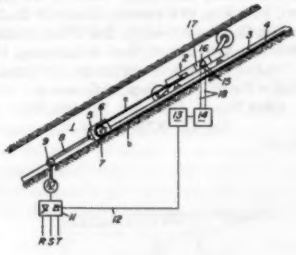
Karl-Heinz Weber, Witten-Heven, Fed. Rep. of Germany, assignor to Gebr. Eickhoff Maschinenfabrik und Eisengeisserei m.b.H., Bochum, Fed. Rep. of Germany

Filed May 8, 1979, Ser. No. 37,067

Claims priority, application Fed. Rep. of Germany, May 20, 1978, 2822129

Int. Cl.³ E21C *29/16*

U.S. Cl. 299—1 **20 Claims**



1. A method to control tensioning by a winch disposed toward the lower drift of an inclined mine seam and coupled by tensioning means to a cable trolley adapted to move along the face of the mine seam to guide and to loop a trailing cable and/or water hose extending onto the mining machine, said method including the steps of:

generating a signal which varies with distance between said cable trolley and said mining machine, and

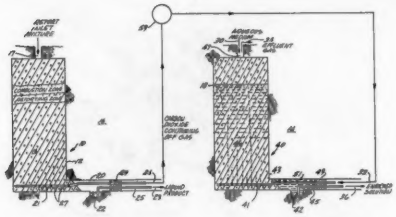
controlling said winch in response to said signal in the appropriate direction for exerting tension by said winch inversely proportional to said distance.

4,260,192

RECOVERY OF MAGNESIA FROM OIL SHALE

John L. Shafer, Mendham Township, Morris County, N.J., assignor to Occidental Research Corporation, Irvine, Calif.

Filed Feb. 21, 1979, Ser. No. 13,437
Int. Cl.³ E21B *43/28*; E21C *41/10*
U.S. Cl. 299—2 **45 Claims**



21. A method for leaching of magnesium values from combusted oil shale particles comprising the step of contacting combusted oil shale particles with an aqueous leaching agent comprising dissolved carbon dioxide and dissolved sulfur dioxide, the dissolved sulfur dioxide present in a minor amount relative to a major amount of carbon dioxide.

4,260,193

METHOD FOR THE RENOVATION OF AN AQUIFER

Dennis E. Stover, Portland, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation of Ser. No. 866,750, Jan. 3, 1978, abandoned. This application Jun. 7, 1979, Ser. No. 46,276
Int. Cl.³ E21B *43/28*
U.S. Cl. 299—5 **1 Claim**

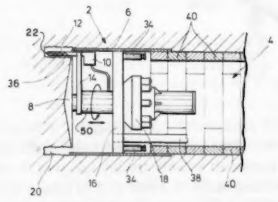
1. A method for the renovation of an aquifer fluid subsequent to solution mining of uranium from an aquifer containing same and separating said uranium from said aquifer fluid via ion exchange resin which comprises removing chloride ions from said aquifer fluid with an ion exchange resin having a commercially unacceptable uranium loading capability.

4,260,194

METHOD AND DEVICE FOR PRODUCING UNDERGROUND CAVITIES USING A DRIVING SHIELD

Friedrich-Karl Blindow, Innsbruck, Austria; Jürgen Decker, Oberaudorf, Fed. Rep. of Germany; Heinrich Kluibenschedl, Rietz, Austria; German Munding, Bad Friedrichshall; Armin Sowa, Ottobrunn, both of Fed. Rep. of Germany, and Harald Wagner, Innsbruck, Austria, assignors to Messerschmitt-Bölkow-Blohm GmbH, Fed. Rep. of Germany

Filed Nov. 1, 1978, Ser. No. 956,787
Int. Cl.³ E21C *27/24*
U.S. Cl. 299—11 **5 Claims**



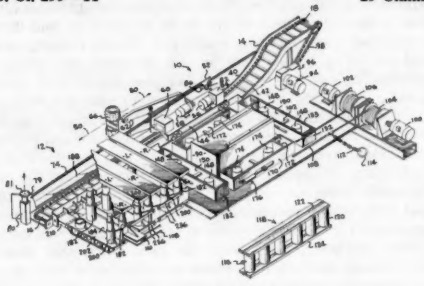
1. A device for producing underground cavities, comprising a tubular drive shield adapted to be advanced into the cavity and having an interior support wall, a support member rotatably and axially movable supported on said support wall and having a radially extending arm portion, a gas jet lance supported on said arm portion, nozzle means associated with said gas jet lance directed ahead and transversely of said lance and said shield, means for supplying hot gases to said nozzle means, and means for rotating said support member and for shifting said support axially with said nozzle means to direct the gases therefrom to form an annular slot in the ground ahead of said shield of a size to accommodate said shield. said nozzle means including a nozzle directed axially of said lance at at least one nozzle directed at an angle to the axis of said lance.

4,260,195

CONTOUR MINER

Gwyn G. Hart, Shady Spring, W. Va., assignor to John M. Daniel, Beckley, W. Va.

Filed May 24, 1979, Ser. No. 42,584
Int. Cl.³ E21C *5/06, 25/06*; E21D *15/02*
U.S. Cl. 299—11 **29 Claims**



1. A contour miner for movement along the periphery of a coal seam for removing coal from a work face perpendicular to the periphery of the seam to a desired depth inwardly of the periphery, said miner comprising:

a movable external deck assembly positioned on a supporting surface externally of the formation outwardly of the periphery of a coal seam to be mined;

external deck forward drive means for moving a forward end of the external deck in a first direction generally parallel to the outer peripheral surface of the seam;

external deck inward-outward drive means for moving the external deck in a second direction substantially perpendicular to the first direction;

an internal roof support-walker assembly positioned inwardly of the formation adjacent the external deck assembly and having a forward portion facing a work face of the coal seam being mined;

power drive means for moving the internal support-walker assembly in said first direction;

carriage means mounted for horizontal reciprocation in said second direction adjacent the forward portion of the support-walker assembly;

a power driven rotary cutter head mounted on said carriage means; and

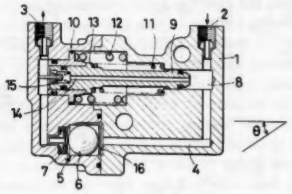
conveyor means extending along said forward portion of the support walker beneath the rotary cutter head outwardly to a discharge end adjacent the forward end of the external deck assembly.

4,260,196

BRAKE PRESSURE CONTROL VALVE WITH DOUBLE SPLIT POINT

Koji Takata, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Nov. 13, 1979, Ser. No. 94,304
Claims priority, application Japan, Nov. 23, 1978, 53-144624
Int. Cl.³ B60T *13/00*
U.S. Cl. 303—6 C **2 Claims**



1. A deceleration-sensitive, load-responsive brake pressure control valve having a double split point comprising:

a body having an inlet, an outlet, and two lines placing the inlet in communication with the outlet and being parallel with each other,

a deceleration sensing valve mounted in one of said two lines,

a first piston mounted in the other line and acted upon by the input pressure and the output pressure and a first spring urging said first piston toward the outlet end of said other line,

a second piston mounted on said first piston, acted upon by the output pressure and a second spring urging said second piston toward the outlet end of said other line, and

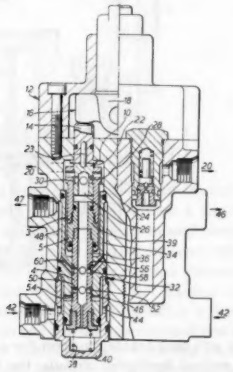
means for limiting the stroke of said second piston to a valve not greater than the stroke of said first piston.

4,260,197

SPOOL TYPE BRAKE VALVES

Michael J. Hawker, Lincoln, England, assignor to Clayton Dewandre Company Limited, England

Filed May 11, 1978, Ser. No. 904,867
Claims priority, application United Kingdom, May 20, 1977, 21456/77
Int. Cl.³ B60T *15/08*
U.S. Cl. 303—52 **4 Claims**



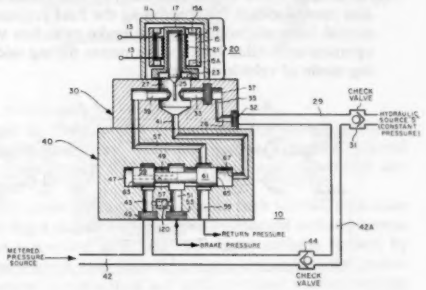
1. An hydraulic brake valve for controlling the application and release of hydraulic fluid pressure to and from the brake units of a vehicle, comprising an exhaust valve assembly having an exhaust spool displaceable within an exhaust valve sleeve by a thrust from a brake operating-member to close off a brake-connected port from an exhaust port, and an inlet valve assembly having an inlet spool connected for axial displacement with the exhaust valve sleeve, the inlet spool being movable within the coacting with an inlet sleeve fixed with respect to the inlet spool by the subsequent displacement of the exhaust valve spool to meter pressure fluid from a supply port connected with an interior of the inlet sleeve to the brake-connected port.

4,260,198

SKID CONTROL VALVE AND SYSTEM

Robert D. Cook, Valencia, Calif., assignor to Crane Co., New York, N.Y.

Filed Mar. 26, 1979, Ser. No. 23,611
Int. Cl.³ B60T *17/18*
U.S. Cl. 303—92 **8 Claims**



1. A vehicle braking control system comprising:

a braking control circuit including a valve driver for providing an electrical skid control braking signal;

means for providing a supply of hydraulic fluid at substantially constant pressure;

means for providing hydraulic fluid at variable metered pressure;

control means having an inlet for accepting said constant pressure hydraulic fluid in a normal mode of operation and for providing a hydraulic control output in response to said braking control circuit, said hydraulic control output being exclusively controlled by said electrical braking signal during said normal mode;

brake pressure valving means selectively responsive to said metered pressure and said hydraulic control output for producing a brake pressure output which is limited by said hydraulic control output; and

hydraulic failure mode adjustment means for connecting said variable metered pressure to said inlet of said control means in the event of failure of said supply of hydraulic fluid at substantially constant pressure so that said hydraulic control output is a function of said electrical braking signal and said metered pressure during said failure mode.

4,260,199

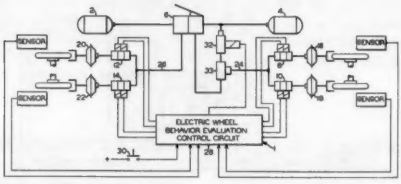
ANTI-SKID AND ANTI-SPIN BRAKING SYSTEM

Erich Reinecke, Burgdorf, Fed. Rep. of Germany, assignor to Wabco Fahrzeugbremsen G.m.b.H., Hanover, Fed. Rep. of Germany

Filed Mar. 30, 1979, Ser. No. 25,624
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1978, 2828813
Int. Cl.³ B60T *8/08*
U.S. Cl. 303—96 **3 Claims**

1. A wheel anti-skid, anti-spin brake control system for a wheeled vehicle having driving and non-driving wheels comprising:

(a) a brake cylinder device for each said wheel of said vehicle;
(b) a source of fluid pressure;
(c) operator-controlled brake valve means for connecting fluid pressure from said source to said brake cylinders of said driving wheels via a first pipe and to said brake cylinders of said non-driving wheels via a second pipe during a braking mode of vehicle operation;
(d) sensor means for providing wheel speed signals in accordance with the rotational velocity of at least one of said driving wheels and at least one of said non-driving wheels;
(e) wheel evaluation control means subject to said wheel speed signals for detecting a skid condition of a respective one of said wheels during said braking mode of vehicle operation, and for detecting a spin condition of a respective one of said driving wheels during a start-up mode of vehicle operation;
(f) modulator valve means controlled by said wheel evaluation control means for controlling the fluid pressure connected from said source to said brake cylinders via said operator-controlled brake valve means during said braking mode of vehicle operation;



(g) bypass valve means between said source of fluid pressure and said modulator valve means associated with said driving wheel brake cylinders for connecting fluid pressure thereto from said source during said start-up mode of vehicle operation;
(h) said modulator valve means of said driving wheel brake cylinders being further controlled by said wheel evaluation control means during said start-up mode of vehicle operation to establish fluid pressure communication between said bypass valve means and said brake cylinder device of a spinning one of said driving wheels to effect the braking thereof; and
(i) check valve means between said bypass valve means and said operator-controlled brake valve means, said check valve means being operatively responsive to the pressure supplied to said modulator valve means via said bypass valve means exceeding the pressure supplied via said operator's control valve device to prevent the back-flow of fluid pressure therepast during said start-up mode of vehicle operation.

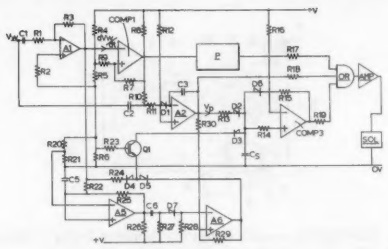
4,260,200

ANTI-LOCK BRAKE CONTROL SYSTEM

Malcolm Brearley, Solihull, and Alfred. K. White, Kings Heath, both of England, assignors to Girling Limited, Birmingham, England

Filed May 11, 1978, Ser. No. 893,610
Int. Cl.³ B60T *8/08*
U.S. Cl. 303—97 **1 Claim**

1. An anti-lock brake control system for vehicles with braked wheels comprising a wheel speed sensor for producing a signal proportional to wheel speed; a first switch having an input connected to the sensor to receive the wheel speed signal and being adapted to respond to the rate of change of said signal so as to produce a first control pulse to effect brake pressure release while a preset first wheel deceleration threshold is exceeded; a second switch that is triggered under the control of a first control pulse and which, when triggered initiates a second control pulse to effect brake pressure release; a first charge storage device that receives the wheel speed signal so that it accumulates a charge dependent on the dip in wheel speed and discharges in response to wheel speed recovery following said dip in wheel speed, and which is associated with the first and second switches so that it discharges in a predetermined manner after the first control pulse terminates and terminates the second control pulse when the stored charge falls to a predetermined level, a second charge storage device which is adapted so that it charges in a predetermined



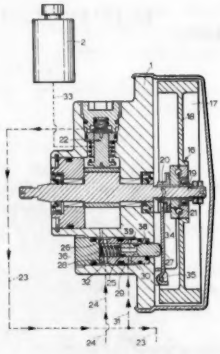
progressive manner while the brake pressure release pulse is produced and discharges at a predetermined decay rate, comparator means that compares the potential on the second charge storage device with a reference potential and produces an extension brake pressure release pulse according to their relative values, and means to vary one of said potentials in a manner dependent on acceleration of the wheel above a preset acceleration threshold so that the extension brake pressure release pulse is terminated by increasing wheel acceleration.

4,260,201

HYDRAULIC ANTI-SKID SYSTEMS FOR VEHICLES

Glyn P. Farr, Leek Wooton, England, assignor to Girling Limited, Birmingham, England

Filed Sep. 13, 1978, Ser. No. 941,938
Claims priority, application United Kingdom, Sep. 15, 1977, 38501/77
Int. Cl.³ B60T *8/093*
U.S. Cl. 303—99 **9 Claims**



9. A hydraulic anti-skid braking system for a vehicle comprising first and second hydraulic circuits, the first hydraulic circuit comprising a supply of operating fluid, a brake for a vehicle wheel actuated by said supply of operating fluid, skid sensing means associated with said wheel, a line through which fluid is supplied from said supply to said brake and a modulator valve assembly interposed in said line, the modulator valve assembly also being incorporated within said second hydraulic circuit which further comprises a reservoir for hydraulic fluid,

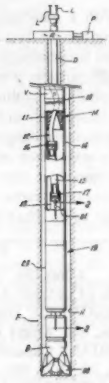
an hydraulic pump adapted to draw fluid from said reservoir, and a control valve which during normal circumstances permits fluid to flow from said pump to said modulator valve assembly from whence it returns to said reservoir, but which is adapted in response to receipt of a skid signal from said sensing means to by-pass said modulator valve whereby said fluid from said pump is returned directly to said skid sensing means, said modulator valve comprising a first inlet for connection to said hydraulic pump by way of said control valve and a first outlet for connection to said reservoir, a second inlet for connection to said supply of operating fluid and a second outlet for connection to said brake, a piston working in a chamber connected to said second outlet, valve means arranged between said second inlet and said second outlet for controlling communication therebetween in dependence upon the position of a piston working in said chamber connected to said second outlet, movement of said piston from a first normal position towards a second brake pressure relieving position being adapted to restrict communication between said first inlet and said first outlet.

4,260,202

BEARING ASSEMBLY

Gary M. Crase, Cypress, and Kurt M. Trzeciak, Irvine, both of Calif., assignors to Smith International, Inc., Newport Beach, Calif.

Filed Aug. 20, 1979, Ser. No. 67,923
Int. Cl.³ F16C *19/00*
U.S. Cl. 308—8.2 **12 Claims**



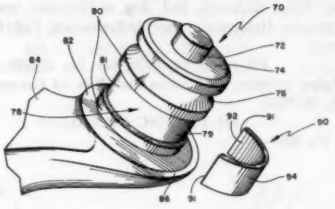
1. A bearing assembly for an in-hole motor having a stator and a rotor, said assembly including: a housing adapted for connection to said stator; a shaft in said housing adapted for connection to said rotor; bearing between said shaft and said housing in thrust transmitting relation therewith; said bearing including a member on said shaft having oppositely facing thrust shoulders, said bearing including a first pair of bearing elements one on one side of member said one on the other side of said member and engageable with said shoulders, a connection between said first pair of bearing elements and said shaft for unitary rotation thereof; a second pair of bearing elements, one of said second pair opposing one of said first pair for thrust transmission in opposite directions; a connection between said housing and said second pair of bearing elements for unitary rotation thereof; and opposing thrust members in said housing for transmitting thrust in opposite directions to said first pair of bearing elements through said second pair of bearing elements.

4,260,203

BEARING STRUCTURE FOR A ROTARY ROCK BIT

Lloyd L. Garner, Dana Point, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Continuation-in-part of Ser. No. 919,263, Jun. 26, 1978, abandoned. This application Sep. 10, 1979, Ser. No. 73,751
Int. Cl.³ F16C *33/12*
U.S. Cl. 308—8.2 **7 Claims**



1. A rotary rock bit comprising:

a main bit body having at least one leg extending downwardly therefrom, each leg having a journal formed thereon having a plurality of axial and cylindrical surfaces;

a cutter cone rotatively mounted on each journal, each cone having a plurality of axial and cylindrical surfaces opposing respective axial and cylindrical surfaces formed by said journal, said journal having a circumferential groove formed in said cylindrical surface of said journal bearing; and

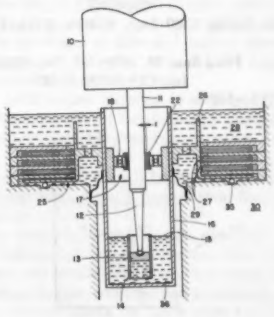
a segmented annular bearing ring is mated within said circumferential groove, the outside surface formed by said annular ring serves as a bearing surface comprising a layer of hardened bearing material, said hardened material is diamond material mounted on a substrate, said substrate being bonded to said segmented annular ring.

4,260,204

DAMPING RESTRAINING BEARING FOR SUPERCRITICALLY OPERATION ROTORS

Dieter Hirt, Augsburg, and Richard Steigenberger, Friedberg, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Augsburg-Nurnberg, Munich, Fed. Rep. of Germany

Filed May 4, 1979, Ser. No. 36,021
Claims priority, application Fed. Rep. of Germany, May 13, 1978, 2821177
Int. Cl.³ F16C *21/00, 23/00, 17/10*
U.S. Cl. 308—9 **6 Claims**



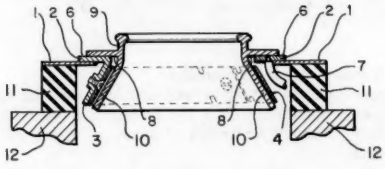
1. In a damped restraining bearing for supercritically operating rotors in which the restraining bearing encompasses the rotor with a predetermined gap and is operable responsive to

radial rotor movements; a damped bearing for said rotor for damping radial movements thereof; and said restraining bearing including a damping member coupled with said damped bearing for centering said restraining bearing relative to said rotor, the improvement comprising: said damped bearing being an end bearing positioned to engage one end of said rotor.

4,260,205
GAS BEARING

Alfons Spies, Seebruck, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Jun. 14, 1979, Ser. No. 48,399
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1978, 2827880
Int. Cl.³ F16C *17/10, 32/06*
U.S. Cl. 308—9 **17 Claims**



1. A gas bearing for rapidly rotating parts in spinning and twisting textile machines, said bearing comprising:

a rotor having a first bearing surface shaped to define a truncated, substantially conical surface;

a first bearing foil shell mounted adjacent the first bearing surface, said foil shell shaped to define a truncated, substantially conical surface, said foil shell including at least one foil having first and second ends, each of which is provided with a weakened portion.

13. A gas bearing for rapidly rotating parts in textile machines, said bearing comprising:

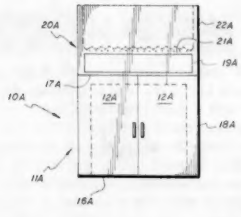
a rotor having a first bearing surface shaped to define a truncated, substantially conical surface;

a bearing foil shell mounted adjacent the first bearing surface, said foil shell shaped to define a truncated, substantially conical surface, said foil shell defining a plurality of weakened portions spaced around the foil shell, said weakened portions acting to increase the flexibility of the foil shell and thereby to improve the extent to which the foil shell conforms to the bearing surface of the rotor.

4,260,206
CABINET

Ronald W. Smith, 2300 Lazy Hollow #343-D, Houston, Tex. 77063

Filed Jun. 28, 1979, Ser. No. 53,071
Int. Cl.³ A47B *77/00*
U.S. Cl. 312—100 **3 Claims**



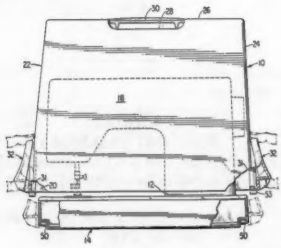
1. A modular article of furniture comprising of a base portion having side walls, a bottom, a top and an internal storage cavity and means for selectively permitting and barring access to said storage cavity; and

a plant receiving portion, also having a bottom and sidewalls but open at the top, removably positioned atop said base, said plant receiving portion bottom being approximately concurrent with said base top and said plant receiving portion side walls representing lineal extensions of said base side walls when one is astride the other.

4,260,207
LATCH FOR SEWING MACHINE COVER

William L. Herron, Elizabeth, and Albert L. Newman, West Orange, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Aug. 6, 1979, Ser. No. 63,898
Int. Cl.³ H01M *39/38;* **A47B** *21/00*
U.S. Cl. 312—208 **6 Claims**

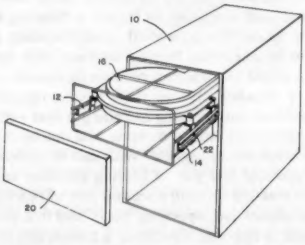


1. In combination with a generally open bottomed cover provided with a carrying handle for a sewing machine, a latch having a handle portion suspended from the cover by a leaf spring biasing the handle portion generally inwardly of such cover, a finger grip portion for enabling a user to pull the latch outwardly against the biasing of said leaf spring, and an inwardly directed paddle portion adapted to be moved by said leaf spring to a position extending into the open end of the carrying case cover whereat it may be engaged generally beneath a sewing machine bed, frame, bed frame or bed cover for enabling the machine to be lifted thereby with the cover.

4,260,208
MANUFACTURING FIXTURE AND SUPPORT FOR MAGNETIC DISC

Bin Lun Ho, Los Gatos, and Albert Guerini, Gilroy, both of Calif., assignors to PRIAM, Cupertino, Calif.

Filed Jan. 26, 1979, Ser. No. 6,861
Int. Cl.³ A47B *88/00;* **A47F** *3/04*
U.S. Cl. 312—242 **11 Claims**



7. A housing for electronic equipment such as a magnetic disc comprising a cabinet, at least one pair of slide members for

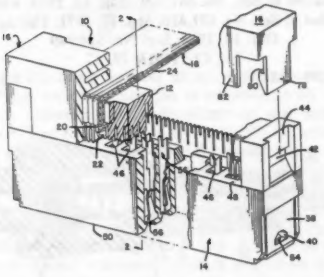
receiving electronic equipment, said slide members being supported by said cabinet wherein electronic equipment can slide out of said cabinet for access to said equipment and can slide into said cabinet for storage, a support frame for receiving electronic equipment and for attachment to said pair of slide members, said support frame including front and rear vertical members in spaced, parallel alignment, each of said members comprising a generally rectangularly shaped rod, a plurality of rods attached to said front and rear members and positioned on either side of said members and on the bottom of said members, and a plurality of brackets attached to said rods positioned on either side of said members, said brackets including a support surface intermediate the top and bottom of said members and means for engaging said pair of slide members, means for attaching a printed circuit board to the top of said vertical members, means for attaching a magnetic disc to said support surfaces whereby said magnetic disc is intermediate the top and bottom of said vertical members, and means for attaching a chassis to said rods on the bottom of said members.

4,260,209

TRANSMISSION CABLE CONNECTOR

Dale R. Zell, Elizabethtown, and Leroy J. Morningstar, Middletown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 5, 1978, Ser. No. 939,756
Int. Cl.[2] H01R *3/06*
U.S. Cl. 339—14 R **6 Claims**



1. An electrical connector for terminating flat transmission cable of the type having at least one ground conductor between adjacent signal conductors, all said conductors being secured in fixed, parallel, closely spaced relationship within an insulating web, said connector comprising:

a housing member having a plurality of through passages extending between a cable engaging surface and a mating face,

a like plurality of terminals each received in a respective passage of said housing member with a mating portion directed towards said mating face and a conductor engaging portion formed by a pair of tines defining a signal conductor engaging slot therebetween extending from said cable engaging surface;

a bussing bar mounted in said housing with an elongated conductor engaging edge of said bar exposed from said cable supporting surface, said elongated edge of said bus bar defining a plurality of pairs of tines, each said pair of tines defining therebetween a ground conductor engaging slot;

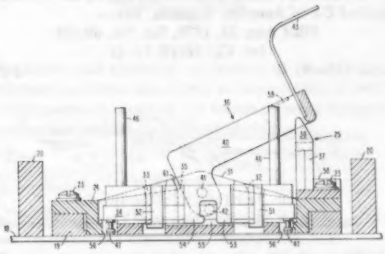
a cover member having a cable engaging surface defined by a plurality conductor alignment channels, alternate ones of said channels being adapted to receive said signal conductors and said ground conductors respectively, and align them (signal and ground) with the appropriate slots of said terminals and said bussing bar, whereby conductors seated in said channels are terminated by applying said housing member to said cover member with said terminals and said buss bar effecting termination of the respective signal and ground conductors.

4,260,210

PLUGGABLE MODULE ACTUATION AND RETENTION DEVICE

Robert Babuka, Vestal; William D. Emmons, Endicott; Robert L. Weiss, Apalachin, and Peter Yacko, Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,498
Int. Cl.[3] H01R *13/635, 13/639*
U.S. Cl. 339—91 R **3 Claims**



2. A module actuation and retention device for connecting a matrix of I/O pins of a pluggable module to a matrix of contact springs protruding from a surface of a planar printed circuit member, which comprises:

spring housing means fastened to said surface of said circuit member and having through openings for housing the contact springs in said matrix;

an actuator bail having a pair of arms pivotally connected to said spring housing means and having an opening between said arms which overlies all of the through openings in said spring housing means;

a pluggable module having a matrix of I/O pins corresponding to said matrix of contact springs;

guide tab means and actuator tab means on said module;

guide tab and actuator tab mating means on said spring housing means for receiving said guide and actuator tab means when a module is inserted through the opening in said bail in a direction normal to said surface of said circuit member to align the matrix of I/O pins on said module into the through openings in said spring housing means and position each I/O pin adjacent to an associated contact spring;

camming means on said actuator bail effective when said bail is depressed and pivoted in one direction to coact with said actuator tab means to slide said module laterally and move the matrix of I/O pins thereon into engagement with said matrix of contact springs;

bail retaining latch means fastened to said spring housing means and having a pair of longitudinally extending latch arms which are yieldable toward and away from each other;

a latch point on the end of each latch arm having an outwardly sloping surface and a base portion having an inwardly sloping surface;

said bail arms normally resting on the outwardly sloping surface of said latch points and effective when the actuator bail is pivoted in said one direction to bend said latch arms toward each other until the bail arms move past said latch points which allows the latch arms to bend away from each other and into engagement with the bail arms; and

positive stop means on said bail retaining latch means for stopping said bail when the bail arms have moved past said

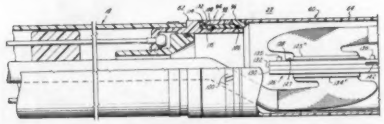
latch points at which point the I/O pins have been overdriven and engage the contct springs in an off-center position, so that pin/contact friction in said off-center position provides a spring force effective when said bail is released to pivot the bail in the opposite direction until the bail arms seat in the base of said latch points and at which point the I/O pins and contact springs will move to a center position of engagement.

4,260,211

QUICK COUPLER FOR SEISMIC STREAMER SECTIONS

John C. Mollere, Nassau Bay, Tex., assignor to Western Geophysical Co. of America, Houston, Tex.

Filed Aug. 23, 1979, Ser. No. 69,208
Int. Cl.[3] H01R *13/62*
U.S. Cl. 339—91 B **2 Claims**



1. In a seismic streamer cable including at least two adjacent cable sections, each section consisting of an outer jacket, at least one stress member inside said jacket, a plurality of hydrophones disposed inside said jacket at desired intervals along the length of said cable section, and a plurality of electrical conductors for transmitting signals from said hydrophones, comprising in combination:

a coupler section assembly for mechanically and electrically connecting together said adjacent cable sections, said coupler section including a cylindrical hollow two-part housing including a male part and a mating female part having inner and outer walls, sealable against fluid invasion when mated, for receiving the pluralities of electrical conductors from each said cable section;

a pair of axially disposed mating connector-plate assemblies in said housing, one said connector plate assembly including a plurality of individual miniature multicontact male plugs rigidly mounted thereon for receiving the conductors from one cable section, the other connector plate assembly including a pair of plates and a plurality of individual miniature multicontact female plugs floatingly mounted there-between for receiving the plurality of conductors from the other cable section; and

means for releasably locking the parts of said two-part housing together after the connector-plate assemblies have been mated together.

4,260,212

METHOD OF PRODUCING INSULATED TERMINALS

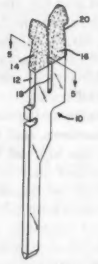
Leon T. Ritchie, Mechanicsburg, and Michael S. Peppler, Lancaster, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 20, 1979, Ser. No. 22,248
Int. Cl.[3] H01R *11/12*
U.S. Cl. 339—97 R **17 Claims**

1. A method of producing insulated electrical terminals comprising the steps of:

stamping a continuous series of terminals from a flat web of metal stock, each said terminal having at least one insulation piercing portion;

subjecting all of said at least one insulation piercing portion of said terminal to an erroding medium which reduces all sharp edges of said portion to radii of curvature; and



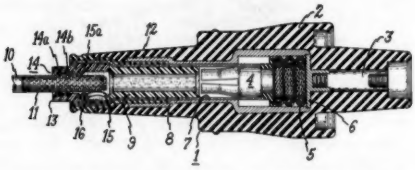
applying a coating of insulative material to said portion of said terminal.

4,260,213

ELECTRIC CIRCUIT INTERRUPTER HAVING MEANS FOR RESTRICTING FLOW OR ARC-GENERATED GASES THEREFROM

Edward J. Kotski, Lenox, and Paul J. Horbal, Adams, both of Mass., assignors to General Electric Company, Philadelphia, Pa.

Continuation of Ser. No. 387,759, Aug. 13, 1973, which is a continuation of Ser. No. 181,416, Sep. 17, 1971. This application Oct. 15, 1974, Ser. No. 514,949
Int. Cl.[3] H01R *13/52*
U.S. Cl. 339—111 **14 Claims**



1. A separable connector module for shielded electrical power cable, the module being of the type having:

(a) an insulating housing;

(b) a passageway extending into said housing, said passageway including a sleeve of gas-evolving material inside the passageway, said gas-evolving material evolving arc-extinguishing gas when subjected to electrical arcing inside said passageway;

(c) a first metal contact member in said passageway and near the inner end of said sleeve, the gas-evolving inner surface of said sleeve being exposed between said first contact and the entrance of said passageway, wherein the improvement comprises,

a resilient gasket around the inner wall and adjacent the entrance of said passageway for restricting the escape of arc-generated gases from said passageway when a second contact member is partly inserted in said passageway and electrical arcing is established between said first and second contact members.

4,260,214

FAULT-CLOSABLE ELECTRICAL CONNECTOR

Michael M. Dorn, Florissant, Mo., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jul. 23, 1979, Ser. No. 59,946
Int. Cl.[3] H01R *13/52*
U.S. Cl. 339—111 **13 Claims**

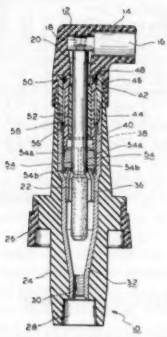
1. A bushing plug having a female contact for receiving and

making engaging connection with the male electrode of an associated connector, said bushing plug comprising, in combination:

an elastomeric housing having a generally tubular configuration about an axis thereof;

a generally tubular conductive insert body fixedly and coaxially mounted within said housing, said insert body forming a chamber therein which is closed at the inner end thereof and having means at said inner end for receiving an external terminal in electrically conductive relationship therewith;

a generally tubular female contact fixedly mounted within and conductively engaging said conductive insert toward the inner end thereof;



a tubular insulating member of arc-responsive material for evolving arc-quenching gas in response to an arc being struck between said male electrode and said female contact and being slidably and coaxially mounted within said tubular conductive insert for movement toward and away from said female contact and for coaxially surrounding said male electrode in close-spaced relationship therewith; and,

a movable contact carried by said insulating member for movement therewith from a first position toward said female contact to a second position away from said female contact and wherein said movable contact engages both said male electrode and said insert body to provide a direct path for current between said male electrode and said insert body when said movable contact is moved into said second position.

4,260,215

ELECTRICAL FUSEHOLDER

Robert S. Gross, and Don C. Wood, both of Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.

Filed May 11, 1979, Ser. No. 38,116

Int. Cl.[3] H01R *13/12*

U.S. Cl. 339—258 F **1 Claim**

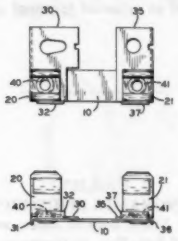
1. A fuseholder comprising:

an elongated, electrically insulating strip forming a base;

first and second electrically conducting U-shaped clips for receiving an elongated cylindrical fuse;

means for securing the U-shaped clips to opposite ends respectively of the insulating strip; and,

first and second electrically conducting sheet metal terminals, said first and second terminals being securely disposed, respectively, between the first and second U-shaped clips and the insulating board, the terminals extending in a direction transverse to the insulating strip, each terminal having a downturned flanged contacting the respective end of the insulating strip for preventing rotation of the terminal relative to the strip, each terminal further having an upturned flange contacting the respective U-shaped clip for preventing rotation of the clip relative to the terminal, each of said terminals being provided with apertures in the ends thereof opposite the U-shaped clips for effecting mechanical mounting of the



fuseholder and electrical connection of the terminals to electrical terminals in a circuit to be protected, at least one of the apertures in one of said terminals being elongated in a direction parallel with the insulating strip.

4,260,216

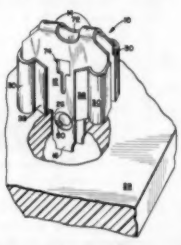
SPADE TERMINAL

Daniel W. Ackerman, Chenango Bridge, N.Y., assignor to Universal Instruments Corporation, Binghamton, N.Y.

Continuation-in-part of Ser. No. 904,657, May, 1978, abandoned. This application Aug. 14, 1979, Ser. No. 66,361

Int. Cl.[3] H01R *9/12, 9/16*

U.S. Cl. 339—258 S **2 Claims**



1. Partially formed, electrically conductive terminals in unitary strip form adapted for automatic insertion on and clinching to a circuit board, each of said terminals comprising;

a pair of coplanar facepieces;

a web, said web connecting said facepieces together at one end;

four parallel resilient C-shaped channels, one edge of each of said C-shaped channels connected to a lateral edge of each of said facepieces, said channels extended a distance from said lateral edges of connection in a direction away from said facepieces and turned around parallel to said facepiece and further turned toward said facepieces thereby forming said C-shaped channels, the concave surfaces of said C-shaped channels facing said facepieces, the other unattached edges of said C-shaped channels being spaced apart a distance from said facepieces;

a pair of coplanar tabs, each one of said tabs extending from the other end of each one of said facepieces along the longitudinal axis of said unitary strip;

a pair of abutting means, one on each tab adjacent the juncture of the tab and facepiece, said abutting means comprising a generally hemispherical dome on one tab surface formed by indenting the opposite tab surface, the diameter of said dome being essentially no greater than the thickness of said circuit board, said abutting means positioned

on said tab so as to be essentially centered within said circuit board upon insertion thereon;

said unitary strip being formed by an interconnection of one of said coplanar tabs of one terminal with one of said coplanar tabs of an adjacent terminal.

4,260,217

PANORAMIC PERISCOPE

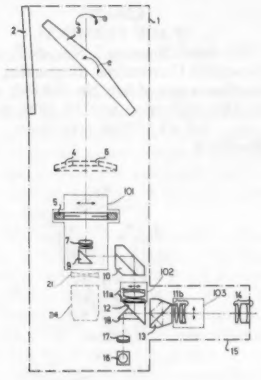
Rolf Traeger; Dieter Marx, both of Aalen, and Helmut Knutti, Oberkochen, all of Fed. Rep. of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Oct. 5, 1978, Ser. No. 948,965

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1977, 2746076

Int. Cl.³ G02B *23/10, 23/12, 13/16*

U.S. Cl. 350—1.2 **1 Claim**



1. A panoramic periscope with daylight viewing and heat-picture optical systems, comprising

(a) a front window (**2**) for incoming rays, said front window being transparent both to rays of a visible spectral region for daylight-viewing and to rays of a spectral region for producing a thermal image,

(b) a reflector mirror (**3**) behind said window in position to receive and reflect entering rays in both of said spectral regions, said mirror being movable both in elevation and in azimuth,

(c) a daylight-viewing optical system,

(d) a heat-picture optical system selectively shiftable to at least two different magnifications,

(e) said heat-picture optical systems having a front lens (**4**) effective at a first magnification of said heat-picture system, said front lens having a central hole,

(f) said hole serving as an entrance pupil when said heat-picture system is operating at a second magnification,

(g) said hole also allowing passage of light in a visible spectrum during daylight-viewing,

(h) observation means including two oculars,

(i) means for directing rays of said visible spectral region into one of said oculars (**15**) for daylight-viewing of a scene, and

(j) means for directing rays of said thermal image spectral region into the other of said oculars (**23**) for viewing a heat-picture image produced by said rays.

4,260,218

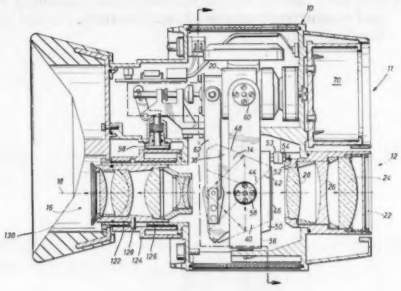
STABILIZED OPTICAL SYSTEM WITH OFF-AXIS STABILIZER

Spencer O. Gullicksen, and Thomas A. Roberts, both of San Jose, Calif., assignors to Tracor, Inc., Austin, Tex.

Continuation-in-part of Ser. No. 814,240, Jul. 8, 1977, abandoned. This application Nov. 9, 1978, Ser. No. 959,223

Int. Cl.³ G02B *23/00*

U.S. Cl. 350—16 **4 Claims**



1. A stabilized optical system comprising:

a housing;

an objective lens group mounted to said housing for collecting light from an object to be viewed;

an eyepiece lens group adjustably mounted to said housing for focusing an image at the eye of a viewer;

a stabilized optical element pivotally mounted to said housing between said objective and eyepiece lens group;

said stabilized optical element comprising a roof Pechan prism, said prism being pivoted in elevation about a horizontal axis passing through the midpoint between the nodal points of said eyepiece and objective lens groups, and pivoted in azimuth about a vertical axis passing through the midpoint between the nodal points of said eyepiece and objective lens groups,

a gyroscopic stabilizer positioned off the optical axis of said lens groups; and

a rigid linkage connecting said stabilized element and said stabilizer, thereby isolating said stabilized element from rotational motion of said housing;

said rigid linkage connecting said stabilized element and said gyroscopic stabilizer comprising

an elevation gimbal pivotally attached to said housing about a horizontal axis passing through the midpoint between the nodal points of said eyepiece and objective lens group;

an optical element azimuth gimbal pivotally connecting said elevation gimbal to said optical element about a first vertical axis passing through said midpoint;

a stabilizer azimuth gimbal pivotally connecting said elevation gimbal to said gyroscopic stabilizer about a second vertical axis; and

a link for orienting said optical element with said gyroscopic stabilizer in azimuth, said link being pivotally connected to said optical element about a third vertical axis and being pivotally connected to said gyroscopic stabilizer about a fourth vertical axis, said first, second, third, and fourth vertical axes being arranged such that the distance between said first and second vertical axes is equal to the distance between said third and fourth vertical axes, and such that the distance between said first and third vertical axis is equal to the distance between said second and fourth vertical axes.

4,260,219

DEVICE FOR COLLECTING LIGHT AND METHOD OF MANUFACTURING SUCH DEVICE

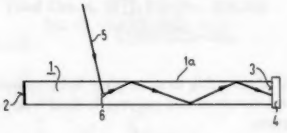
Waldemar Greubel, and Ferdinand Quella, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 1, 1979, Ser. No. 62,784

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1978, 2833934

Int. Cl.[3] H01L *31/00;* G02B *5/14*

U.S. Cl. 350—96.10 22 Claims



1. A device for collecting light comprised of a body functioning as a light trap and having at least one light exit window, said body being comprised of a solid synthetic carrier material having an index of refraction greater than one and containing therein substantially uniformly dispersed fluorescent particles which have finite dipole moments with different values in the basic state and in the excited state of said particles and an amount of at least one amphiphilic additive colloidally dissolved in said synthetic carrier material in such a manner that each fluorescent particle is enclosed by a colloidal particle and are positioned in an environment with an orientation polarization whereby the environment can re-orientate so quickly that it achieves its thermodynamic equilibrium substantially completely during the existence of the excited state in the fluorescent particle.

4,260,220

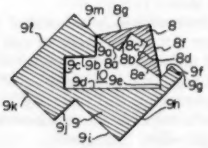
PRISM LIGHT GUIDE HAVING SURFACES WHICH ARE IN OCTATURE

Lorne A. Whitehead, Vancouver, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Canada

Filed Jun. 15, 1979, Ser. No. 48,791

Int. Cl.[3] G02B *5/14*

U.S. Cl. 350—96.28 12 Claims



1. A light guide comprising a longitudinal hollow structure made of transparent dielectric material, said structure having substantially planar inner and outer surfaces which are in octature.

4,260,221

MULTIMODE FIBER WITH Z-DEPENDENT INDEX PROFILE

Dietrich Marcuse, Lincroft, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 16, 1979, Ser. No. 20,994

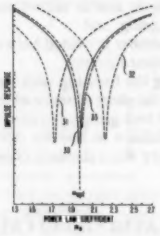
Int. Cl.[3] G02B *5/14*

U.S. Cl. 350—96.31 5 Claims

1. A multimode optical fiber (**10**) comprising an inner core region (**11**) surrounded by a cladding (**12**);

said core region having a substantially power law, refractive index profile which decreases from a maximum at the center of said core to a minimum at the core-cladding interface,

said power law having an optimum exponent, α_{opt}, for optimum impulse response;



characterized in that:

the average of any deviations in the α-value of said profile about the optimum α-value is minimized over finite intervals of said fiber.

4,260,222

MULTI-LAYER NON-REFLECTING FILM

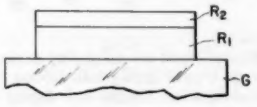
Tokujiro Kozawa, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 29, 1979, Ser. No. 53,419

Claims priority, application Japan, Jul. 11, 1978, 53/84242

Int. Cl.[3] G02B *1/10, 5/28*

U.S. Cl. 350—164 8 Claims



1. A multi-layer non-reflecting film comprising at least two layers of least one of which is made of a mixture of tantalum oxide (Ta_2O_5) and zirconium oxide (ZrO_2) containing 5 to 25% by weight of tantalum oxide (Ta_2O_5).

4,260,223

LENS SYSTEM FOR PHOTOGRAPHING OBJECTS FROM INFINITY TO A VERY SHORT DISTANCE

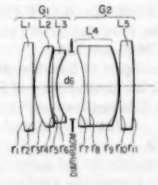
Yoshinari Hamanishi, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Aug. 16, 1979, Ser. No. 67,141

Claims priority, application Japan, Aug. 21, 1978, 53-100873

Int. Cl.[3] G02B *9/60, 9/62*

U.S. Cl. 350—465 10 Claims



1. A lens system for photographing objects from infinity to a very short distance, comprising:

a forward group having a positive refractive power, said

forward group being movable by a predetermined distance in the direction of the optic axis of the lens system in accordance with the object distance for focusing;

a rearward group having a positive refractive power and disposed rearwardly of said forward group, said rearward group being movable by an amount smaller than the amount of movement of said forward group in the direction of the optic axis in accordance with the object distance for focusing; and

a diaphragm member provided between said forward group and said rearward group;

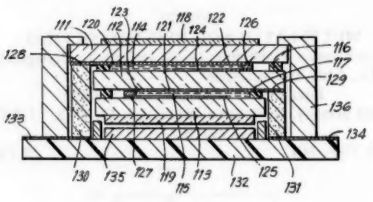
whereby during the focusing with respect to from the infinity object to the short distance object, the relative spacing between said two groups is increased in accordance with the object distance to thereby permit the photographing of up to a very short distance object to be well effected.

4,260,224

MULTI-LAYER LIQUID CRYSTAL PANEL

Masaji Takayama, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Aug. 2, 1978, Ser. No. 930,438
Claims priority, application Japan, Aug. 2, 1977, 52-92776
Int. Cl.³ G02F 1/133
U.S. Cl. 350—335 **7 Claims**



1. A multi-layer liquid crystal display device comprising at least two liquid crystal display cells having four edges, said cells aligned along a line of sight, each display cell including a pair of opposed transparent glass plates with a liquid crystal material sealed therebetween, one of said plates of each cell having transparent electrode means disposed thereon for forming a common electrode, the other of said plates having a plurality of segmented transparent electrode means disposed thereon for forming at least one complete character when an electric field is selectively applied across said liquid crystal between said segment electrode means and said common electrode means, one of said plates having a terminal region on a single edge in each cell, said terminal region extending beyond the edge of the opposed plate, all of the terminals for connecting the electrodes of each display cell to the electrical circuitry through conducting resilient means being located on said terminal region, said terminal region for each cell extending beyond the corrresponding edges of the remaining cells behind said terminal region.

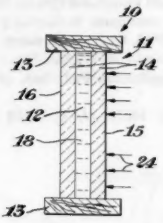
4,260,225

ENERGY SAVING RADIANT INSULATIVE DEVICE

Wilhelm E. Walles, Freeland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 34,080, Apr. 27, 1979, abandoned, which is a continuation of Ser. No. 846,745, Oct. 31, 1977, abandoned. This application Jun. 18, 1979, Ser. No. 49,777
Int. Cl.³ B32B 1/06
U.S. Cl. 350—353 **18 Claims**

1. An energy saving device comprising a light transmissive enclosure member containing a polymeric fluid, said polymeric fluid being transmissive to light and radiant heat at a first temperature and being sufficiently less transparent at a second temperature different from the first temperature, due to separation of the polymeric fluid into at least a polymer-rich phase and a solvent-rich phase at said second temperature, to reduce light and radiant heat transmission therethrough, the device



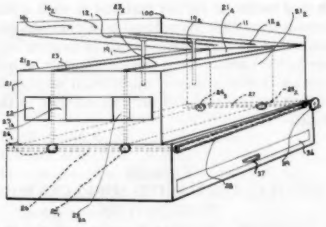
being capable of reverting to its original light transmissive state when the temperature of said polymeric fluid is adjusted to the first temperature.

4,260,226

EYE DEPTH PERCEPTION TESTING APPARATUS

Bahador Ghahramani, 752 Bourbon Ave., Baton Rouge, La. 70803

Filed Sep. 4, 1979, Ser. No. 72,120
Int. Cl.³ A61B 3/08, 3/02
U.S. Cl. 351—3 **10 Claims**



1. In apparatus for testing the eye depth perception of a patient which includes the combination of

a housing, inclusive of a planar, horizontally oriented member on which there is provided a pair of spaced parallelly aligned elongate slots,

a pair of carriers, each of which is mounted and movable within an elongate slot, respectively, of said planar, horizontally oriented member,

a pair of elongated pegs, of substantially equal length, each of which is mounted upon, and vertically projected from one of said carriers, respectively, and movable therewith within said elongate slots, respectively,

a line shaped as a loop, two sides of which can be handled by the patient, these ends thereof being secured to the sides of the carriers faced toward the patient, while the other ends are secured to the opposite sides of the carriers and looped so that pulls by the patient on the side of the loop handled by the patient will cause unilateral movement of the carriers, in either direction, within the elongated slots, with consequent movement of the vertically projected elongate pegs to and from a separated side-by-side position to a more distant separation by movement of the pegs one away from the other, the improvement comprising

a pair of holders, one each of which is transversely mounted upon a movable carrier, respectively, each providing a means for mounting a preselected distance apart pegs of varying color and cross-section,

mirrored walls, at least partially surrounding said carriers, and pegs, the reflecting faces of which are directly inwardly, constituting a portion of said housing,

a light source of adjustable intensity for emitting light into

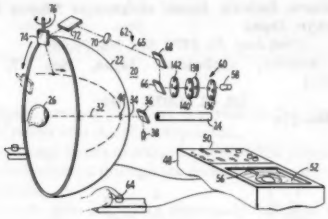
said housing whereby such an arrangement of said mirrored walls causes dispersing of said light and elimination of landmark points, thus creating greater objectivity in testing.

4,260,227

AUTOMATED KINETIC PERIMETRY APPARATUS AND METHOD

Charles R. Munnerlyn, Sunnyvale; Lawrence R. Joba, Cupertino, and Ramakrishna Shanker, Mountain View, all of Calif., assignors to Coherent, Inc., Palo Alto, Calif.

Filed Oct. 4, 1977, Ser. No. 839,315
Int. Cl.³ A61B *3/02, 3/06*
U.S. Cl. 351—24 **2 Claims**



2. Apparatus for kinetic perimetry comprising:
a hemispherically shaped perimeter bowl;
apparatus for positioning the eye of a patient in line with the axis of said perimeter bowl;
means for automatically scanning a target light spot within said perimeter bowl from a plurality of positions and directions outside of the field of vision of the eye of the patient, to points on said perimeter bowl where the target light spot is first seen by the patient; and
wherein said automatic scanning means includes means for moving each new scan from a position and in a direction dependent upon the result of the previous scan.

4,260,228

COLLAGEN GEL CONTACT LENS AND METHOD OF PREPARATION

Teruo Miyata, Tokyo, Japan, assignor to Opticol Corporation, Stamford, Conn.

Filed Jan. 21, 1980, Ser. No. 113,856
Int. Cl.³ C08L *89/06;* **C09H** *1/04;* **G02C** *7/04*
U.S. Cl. 351—160 H **13 Claims**

1. As an article of manufacture a soft contact lens consisting of a lens-shaped, subsequently aldehyde-crosslinked gel of solubilized collagen, said gel comprising (a) 1.0 to 30 wt.% collagen, (b) 0.3 to 5.0 mol/l of a water-soluble, aliphatic, monomeric, polyhydroxy compound, and (c) the balance water.

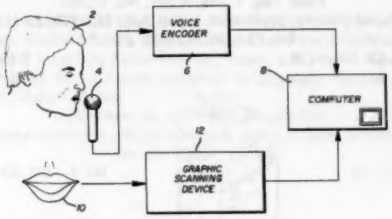
4,260,229

CREATING VISUAL IMAGES OF LIP MOVEMENTS

Richard W. Bloomstein, 1443 Cavell, Highland Park, Ill. 60035

Filed Jan. 23, 1978, Ser. No. 871,538
Int. Cl.³ G03B *21/32*
U.S. Cl. 352—50 **8 Claims**

1. A method of graphically creating lip images which comprises providing a phoneme encoded representation of speech sounds, providing an encoded representation of selected lip configurations, transmitting both of said encoded representations to a data memory device for storage therein, and transmitting from said data memory device to a graphical output device and under control of a coded speech input and a coded selected lip configuration, both of which are transmitted to said data memory device, coded signals that cause said graphical display device to display lip images approximately corresponding to the uncoded form of said coded speech input.

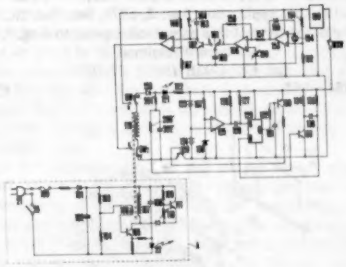


4,260,230

CHARGE DEVICE FOR SECONDARY BATTERIES

Ryoichi Suzuki, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 10, 1979, Ser. No. 28,674
Claims priority, application Japan, Apr. 18, 1978, 53/46090; Apr. 18, 1978, 53/46091
Int. Cl.³ G03B *29/00, 7/26;* **H02J** *7/04*
U.S. Cl. 354—76 **12 Claims**

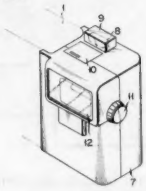


1. A charge system for a camera comprising:
(A) a charge device including:
(a) an oscillation circuit for producing A.C. power; and
(b) an oscillation coil coupled to the oscillation circuit, said coil acting as a primary coil of a transformer;
(B) a camera including:
(a) a secondary power source circuit;
(b) a photographing circuit to be operated by means of the output voltage of the secondary power source circuit as power source, said circuit at least including a coil means for controlling the operation of a camera element;
(c) connecting means for selectively connecting the coil means to the secondary power source circuit or the photographing circuit, said coil means acting as a secondary coil to a transformer for the oscillation coil so as to induce a voltage when the coil means is electromagnetically coupled with the oscillation coil, the secondary power source circuit being charged with the voltage induced in the coil means when the coil means is connected to the secondary power source circuit by means of the connecting means.

4,260,231
ELECTRONIC FLASH DEVICE

Osamu Kawarada, Fuchu, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 17, 1979, Ser. No. 67,360
Claims priority, application Japan, Sep. 14, 1978, 53-113364
Int. Cl.³ G03B *15/03, 15/02*
U.S. Cl. 354—128 **7 Claims**

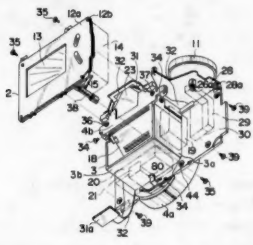


1. In an electronic flash device comprising a power switch, an indicating member for indicating by lightening the charging voltage in a main capacitor for flashing, and a flash device body to contain said members therein, the improvement comprising a member moving in response to on operation of said power switch and an interlocking mechanism for interlocking said switching member with said indicating member, so that said indicating member is projected outward from said flash device body by the operation of said power switch.

4,260,232
CAMERA STRUCTURE FOR SINGLE LENS REFLEX CAMERA

Hiroshi Ueda, Nara; Takayoshi Miyamoto, and Masatake Niwa, both of Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 862,967, Dec. 21, 1977, Pat. No. 4,163,612. This application Apr. 3, 1979, Ser. No. 26,747
The portion of the term of this patent subsequent to Aug. 7, 1996, has been disclaimed.
Int. Cl.³ G03B *19/12, 17/02*
U.S. Cl. 354—152 **5 Claims**

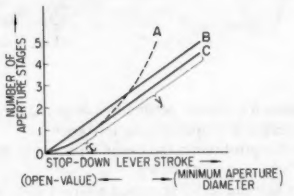


1. A single lens reflex camera comprising:
a camera body;
a shutter block including a base plate, a shutter mechanism and a shutter control mechanism mounted as a unit on said base plate;
a lens supporting structure formed with a mounting for the camera objective including a diaphragm mechanism;
a mirror box including a reflex mirror and a mirror driving mechanism mounted therein;
a diaphragm control means including a movable member to be interlocked with said diaphragm mechanism for controlling the latter as a function thereof;
a photoresponsive element for generating an output in accordance with scene light;
means for actuating said movable member;
means for determining the position of said movable member as a function of the output of said photoresponsive element;
said shutter block, lens supporting structure, mirror box and diaphragm control means forming a subassembly in which said shutter control mechanism, said morror driving mechanism, said movable member, means for actuating and means for determining are operatively interconnected with one another to perform a predetermined sequential operation and enabling independent adjustment thereof; and
said sub-assembly being attached to the camera body.

4,260,233
DIAPHRAGM MECHANISM OF A PHOTOGRAPHIC LENS

Toru Fukuhara, Isehara, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Aug. 30, 1979, Ser. No. 70,982
Claims priority, application Japan, Sep. 7, 1978, 53/122124[U]
Int. Cl.³ G03B *9/06*
U.S. Cl. 354—274 **7 Claims**



1. A diaphragm mechanism of a photographic lens comprising:
(a) a plurality of diaphragm blades defining an aperture opening;
(b) a stop-down lever;
(c) transmission means for transmitting the movement of said stop-down lever to said diaphragm blades to displace them and determine the aperture opening; and
(d) cam means for controlling the amount of displacement of said diaphragm blades for the amount of movement of said stop-down lever so that in the initial stop-down area from the fully open aperture diameter to an aperture diameter stopped down by approximately one stage, the number of aperture stages is varied in the manner of an arithmetic progression when the amount of movement of said stop-down lever is varied in the manner of a geometric progression and that outside said initial stop-down area, the number of aperture stages is also varied in the manner of an arithmetic progression when the amount of movement of said stop-down lever is varied in the manner of an arithmetic progression.

4,260,234
MEDIA TRANSPORTER FOR PHOTOTYPESETTER-PROCESSOR

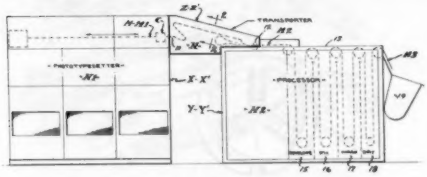
John S. Burton, Los Angeles, Calif., assignor to Autologic, Inc., Newbury Park, Calif.

Filed Jun. 25, 1979, Ser. No. 51,524
Int. Cl.³ G03D *3/08*
U.S. Cl. 354—319 **37 Claims**

1. A film media transporter for delivering exposed media from an intermittently operated phototypesetter and into a film processor operating at an average throughput rate of said phototypesetter, and including;
a frame extending from a film media delivery opening of the phototypesetter to a film media reception opening of the film processor,

film media guide means carried by the frame to receive film media from the phototypesetter delivery opening and to deliver the same toward and spaced from the film processor reception opening,

a series of roller pairs motorized through slip clutch means at a forward transport rate substantially faster than the forward delivery rate of film media from the phototypesetter and engageably receiving and forwardly transporting the film media therebetween and through said guide means,



whereby reverse transport is permitted for retraction of film media into the phototypesetter,

buffer storage means to receive a loop of film media in excess thereof received through the reception opening of the film processor,

and a turn gate extending alternately between the guide means and the buffer storage means for alternate storage of and delivery of the film media to the film processor reception opening.

4,260,235

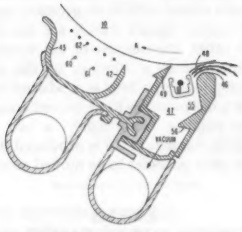
CONTAMINATION PREVENTION SYSTEM

James B. Stack, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 26, 1979, Ser. No. 24,286

Int. Cl.³ G03G *15/00*; H01H *47/32*; H01T *19/04*; G03G *21/00*

U.S. Cl. 355—3 CH **38 Claims**



1. An electrophotographic copier machine of the transfer type wherein a boundary layer of air moves with a moving photoreceptive material, comprising:

a support surface for said moving photoreceptive material;

charging means to deposit a relatively uniform charge on the photoreceptive material;

exposure means for producing an electrostatic image of an object to be copied on the charged photoreceptive material for variably discharging said material in accord with variations in the darkness of said object;

developing means for depositing toner particles on said electrostatic image;

transfer means to transfer said toner particles from said photoreceptive material to a copy-receiving medium; and

a scavenging chamber located along the moving photoreceptor with a leading edge means positioned within said boundary layer, said leading edge means taking a curved shape to form a venturi with the photoreceptor surface to cause said boundary layer to expand into said scavenging chamber to minimize contamination of said machine by toner particles entrained in said boundary layer.

4,260,236

ELECTROPHOTOGRAPHIC APPARATUS

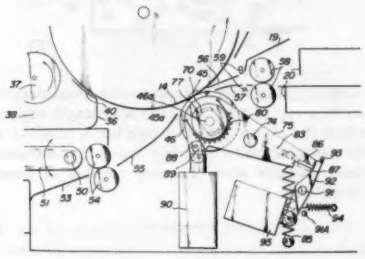
Hiroshi Tsuda, Mitaka; Kiyoshi Miyashita; Masaji Nishikawa, both of Hachioji; Akira Shimizu, Fuchu, and Muneo Kasuga, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 16, 1979, Ser. No. 30,626

Claims priority, application Japan, Apr. 18, 1978, 53-46181

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 TR **16 Claims**



1. An electrophotographic apparatus comprising a retentive member arranged movably while retaining a visible toner image or an invisible electrostatic charge latent image corresponding to an image of a document to be copied;

a transferring member arranged movably at a transfer section with respect to the retentive member between a first operative position and a second inoperative position, in the first operative position the transferring member being closely adjacent to or in contact with the retentive member so as to be able to transfer the toner or charge image onto a record paper which is supplied between the retentive member and the transferring member along a record paper feed path, whilst in the second inoperative position the transferring member is separated from the retentive member, and

means for detecting a paper jam on the record paper feed path to produce a paper jam signal; the improvements comprising means for moving the transferring member from the first operative position to the second inoperative position in response to the paper jam signal and for holding the transferring member in the second inoperative position; and

means for releasing the holding condition of the transferring member in the second inoperative position and returning it into the first operative position after the jammed paper has been removed from the apparatus and the retentive member has moved at least by such an amount that a residual toner or charge image has passed through the transfer section.

4,260,237

ELECTROPHOTOGRAPHIC APPARATUS

Masaji Nishikawa, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 5, 1979, Ser. No. 9,582

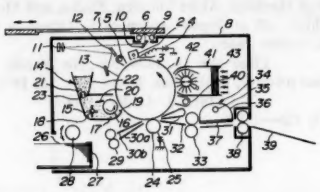
Claims priority, application Japan, Feb. 10, 1978, 53/14473

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 FU **10 Claims**

1. An electrophotographic apparatus for obtaining a plurality of duplicated copies from image-like information formed on a charge retentive member by one exposure, the apparatus comprising: a light source for illuminating a document to be copied, a photosensitive charge retentive member for forming

image-like information thereon based on an optical image of the document through an optical system, a development means for forming a toner image on the charge retentive member to be transferred to recording paper based on the image-like information, a radiative fixing means for heating and fixing the toner image formed on the recording paper and including a



radiation member for generating light having a wavelength at least mainly in a region other than the wavelength region of light to which the charge retentive member is sensitive and heats toner particles, and a cleaning means for eliminating residual toner particles after necessary member of transfer times are completed.

4,260,238

TRANSFER TYPE ELECTROSTATIC COPYING APPARATUS

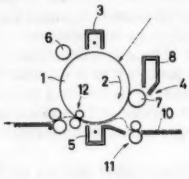
Nobuhiko Kozuka, Suita, and Toru Nakazawa, Osaka, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jun. 18, 1979, Ser. No. 49,640

Claims priority, application Japan, Jun. 24, 1978, 53-76659

Int. Cl.[3] G03G *15/00*

U.S. Cl. 355—3 TR **4 Claims**



1. A transfer type electrostatic copying apparatus comprising:

a photosensitive member made of a photoconductive organic material substantially composed of 10 parts by weight of poly-N-vinylcarbazole, 20 parts by weight of 2.4.7-trinitro-9-fluorenon, 5 parts by weight of acrylic resin, 5 parts by weight of benzene and 30 parts by weight of tetrahydrofuran;

charging means for forming an electric charge on the surface of said photosensitive member;

exposure means for directing a light image of an original to be copied onto said charged photosensitive surface and for thereby forming an electrostatic latent image thereon;

developing means for forming a visible toner image of said electrostatic latent image by means of one-component polarizable toner particles;

transfer means for transferring said visible toner image onto a transfer paper; and

charge eraser means for removing from said photosensitive surface any residual electric charge remaining thereon after transfer therefrom of said visible toner image by irradiating said photosensitive surface with light rays of wave lengths excluding ultraviolet rays and near ultraviolet rays.

4,260,239

BRUSH TYPE TONER DEPOSITION DEVICE

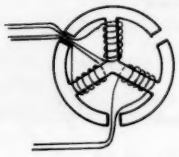
Jan Peperstraete, Oud Heverlee, and Walter Breugelmans, Aarschot, both of Belgium, assignors to Repro S.V., Vilvoorde, Belgium

Filed Aug. 31, 1979, Ser. No. 71,715

Claims priority, application Netherlands, Sep. 15, 1978, 7804920

Int. Cl.[3] G03G *15/00*

U.S. Cl. 355—3 DD **6 Claims**



1. A reproduction device of the electro-static type comprising an image carrier and a toner deposition device of the brush type consisting of a roller and a magnet arranged inside the same characterized in that the magnet and the roller are arranged so as to be stationary and the magnet is a multi-polar electro-magnet and has a three-phase winding, a generator forming digital signals and summation circuits for the weighted summation of said digital signals to produce respective alternating voltage output signals which are out of phase with respect to each other, the outputs of the summation circuits being each connected to a winding of the electro-magnet whereby a rotating magnetic field is produced by said electromagnet to cause toner particles to be moved around said roller, said three-phase winding being fed by a two phase current whereby a rotating magnetic field is produced by said electromagnet to cause toner particles to be moved around said roller.

4,260,240

MOVABLE SUPPORT FOR ELECTROSTATIC CORONA DISCHARGE DEVICE

Reinhold Pieper, Wilhelmshaven, Fed. Rep. of Germany, assignor to Olympia Werke AG, Wilhelmshaven, Fed. Rep. of Germany

Filed Nov. 5, 1979, Ser. No. 91,499

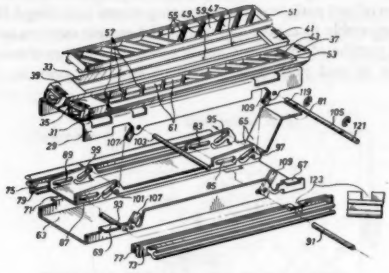
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1978, 2849233

Int. Cl.[3] G03G *15/00*

U.S. Cl. 355—3 CH **6 Claims**

1. In an electrostatic copier including a device for the electrostatic transfer of a toner image disposed on an electrophotographic recording material to an image receiving material whose rear side is chargeable by a corona discharge device composed of an elongate electrically conductive shielding housing and at least one corona discharge wire clamped in an insulated manner between the housing ends, the improvement comprising: a carrier to which said corona discharge device is fixed; a slide member supporting said carrier and with respect to which said carrier is movable between two end positions for setting the distance between said corona discharge device and

the surface of the recording material; a control member connected for moving said carrier between its end positions; means defining guide rails extending parallel to the recording material



surface and fixed to the copier; and means defining guide elements fixed to said slide member and arranged to travel along said rails to guide the movement of said slide member, said guide elements being removable from said rails.

4,260,241

COPYING APPARATUS

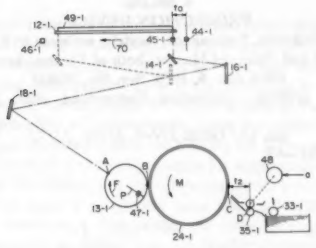
Toshio Honma, Tokyo; Katsushi Furuichi, Yokohama; Katsumi Murakami, and Masahiro Tomosada, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1979, Ser. No. 39,159

Claims priority, application Japan, May 17, 1978, 53/58466; Dec. 28, 1978, 53/164828

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 R **39 Claims**



1. A copying apparatus comprising,

a rotatable recording medium;

process means for forming an image, corresponding to an image of an original, on said recording medium, said process means including reciprocable means for scanning the original, and transfer means for transferring the image formed on said recording medium to a transfer medium.

feed means for feeding a said transfer medium to an image transfer station;

first detector means for detecting the presence of said reciprocable means at a predetermined position along a reciprocating path thereof;

second detector means for detecting a particular position of said recording medium;

memory means for storing, at least until termination of the scanning operation for the original by said reciprocable means, the time interval between outputs of said first and second detector means; and

control means responsive to an output of said memory means for actuating said feed means, after the termination of the scanning operation, for accurately registering the recording medium image on the transfer medium at the transfer station.

4,260,242

ELECTROPHOTOGRAPHIC APPARATUS FOR FORMING A DUPLICATED IMAGE AT ANY DESIRED POSITION ON A RECORD CARRIER

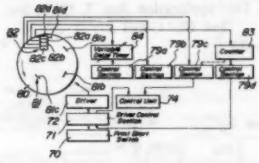
Masaji Nishikawa, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 4, 1979, Ser. No. 44,969

Claims priority, application Japan, Jun. 8, 1978, 53/68254

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 TR **15 Claims**



1. An electrophotographic apparatus comprising

means for exposure-scanning a document to be duplicated to produce an imagewise modulated light ray;

a charge retentive member for retaining an electrostatic charge image formed thereon on the basis of said imagewise modulated light ray;

means for driving the charge retentive member through a transfer section;

means for feeding a record carrier through the transferring section at which the record carrier is positioned opposite to the charge retentive member; and

means for transferring the charge image with or without being developed with toners onto the record carrier at said transferring section, the improvements comprising

means for shifting at least one operational timings of the exposure-scanning means, the charge retentive member driving means and the record carrier feeding means in such a manner that the charge image can be transferred at any desired position on the record carrier viewed in the feeding direction of record carrier.

4,260,243

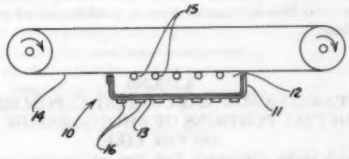
CLEANING APPARATUS

Donald T. Dolan, and Salvatore J. Calvi, both of Ridgefield, Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 15, 1979, Ser. No. 84,963

Int. Cl.³ G03G *21/00*

U.S. Cl. 355—15 **8 Claims**



1. A cleaning apparatus for use in an electrostatographic reproducing machine to remove magnetic toner particles from a moving surface of said machine comprising in combination:

a frame member including a container means;

scraping means positioned in contiguous relation to said moving surface to remove toner particles adhering to said surface; and

magnetic means positioned on said frame opposite to said scraping means for attracting said toner particles away from said surface and into said container means said container means including means for breaking the magnetic attraction between the toner particles and said magnetic means whereby the toner particles can be removed from said container means.

4,260,244

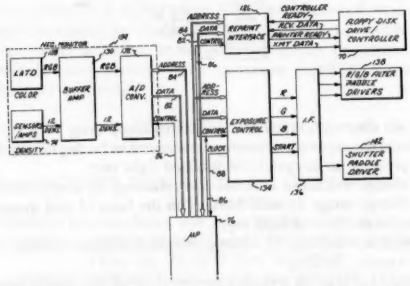
PHOTOGRAPHIC REPRINT SYSTEM WITH FILM SIZE CODE COMPARISON

Ronald C. Laska, Minnetonka, and Janis Pone, Minneapolis, both of Minn., assignors to Pako Corporation, Minneapolis, Minn.

Continuation-in-part of Ser. No. 23,521, Mar. 23, 1979, abandoned. This application Jan. 7, 1980, Ser. No. 109,824

Int. Cl.[3] G03B *27/72, 27/76*

U.S. Cl. 355—35 **10 Claims**



1. A photographic printing system for printing photographic prints from a plurality of photographic film originals of different film types which are connected together, the printing system comprising:

first storage means for storing a plurality of color balance setups, each color balance setup including a first film size code indicative of the film size with which the color balance setup is used;

second storage means for storing an indication of a selected one of a plurality of color balance setups stored by the first storage means to be used in printing the film original and a second film size code indicative of the size of the film original to be printed;

means for retrieving, prior to printing the film original, the stored indication and the second film size code from the second storage means;

means for comparing the second film size code retrieved from the second storage means with the first film size code associated with the selected color balance setup stored in the first storage means;

means for controlling printing of the film original as a function of the selected color balance setup if the first and second film size codes have a predetermined correspondence.

4,260,245

APPARATUS FOR MAKING TEST EXPOSURES ON MARGINAL PORTIONS OF PHOTOGRAPHIC FILMS OR THE LIKE

Friedrich Hujer, Grünwald, Fed. Rep. of Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

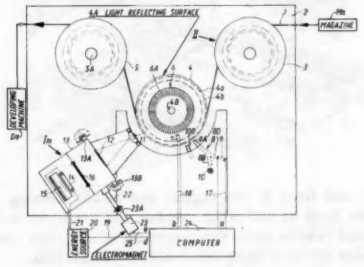
Filed Jan. 22, 1979, Ser. No. 5,515

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1978, 2803380

Int. Cl.[3] G03B *15/00, 27/32*

U.S. Cl. 355—40 **24 Claims**

1. Apparatus for making test exposures on previously unexposed portions of a perforated web of photographic material, particularly on unexposed marginal portions of color photographic films with exposed film frames, comprising means for continuously advancing the web lengthwise along a predetermined path; signal generating means for monitoring the continuously advancing web for the presence of perforations in a first portion of said path; stationary imaging means including a flash unit actuatable to expose the image of a sample onto an unexposed portion of the continuously advancing web in a second portion of said path downstream of said first portion; and



control means interposed between said monitoring means and said imaging means to actuate said imaging means with a delay which follows the generation of a first signal denoting the detection of a selected perforation and during which the selected perforation advances through a predetermined distance along said path, including pulse generator means operative to transmit second signals in response to movement of the web through unit distances along said path, and means for processing said first and said second signals.

4,260,246

PROJECTION DEVICE

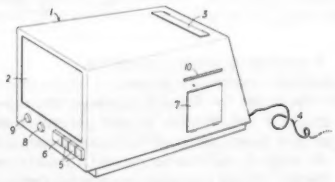
Leopold Rollenitz, Totzenbach, Austria, assignor to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria

Filed Apr. 6, 1979, Ser. No. 28,023

Claims priority, application Switzerland, Apr. 20, 1978, 4242/78

Int. Cl.[3] G03B *27/46, 27/54, 27/72*

U.S. Cl. 355—45 **6 Claims**



1. In a projection device with a projection system, for movie picture films, transparencies, slides, etc., for their imaging, remotely if necessary, on a screen including a projection screen, a translucent light-transmitting screen or the like, the projection system having a source of projection light, defining an aperture, having optical lens members forming an objective lens and defining an optical beam path, the improvement comprising in combination therewith

a photographing device for so-called instant pictures having a light-sensitive layer which are derived from the imaging and from their picture content, respectively, including means for the performance of the photographing of any instant picture,

said means for reducing the aperture of the projection system and for increasing the image sharpness on the light-sensitive layer of the instant picture to be exposed, said means being operative only during the photographing and during the exposure, respectively,

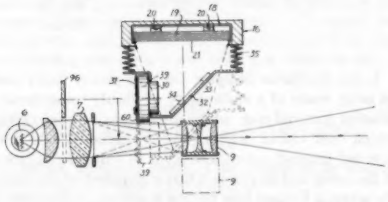
said means for reducing the aperture of the projection system comprises means for bringing another lens with a smaller aperture into the optical beam path of the projection system compared to that of lenses for projection onto the screen.

4,260,247

INSTANT PRINT SLIDE PROJECTOR

Frank P. Bennett, Franklin Lakes, N.J., assignor to GAF Corporation, Wayne, N.J.

Filed Jun. 11, 1979, Ser. No. 47,634
Int. Cl.³ G03B *13/28*
U.S. Cl. 355—45 **8 Claims**



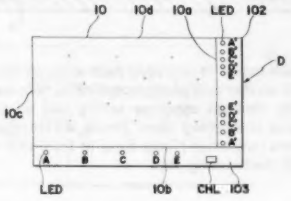
1. An instant print slide projector for sequentially displaying a plurality of photographic images on a remote screen one at a time, and selectively copying one or more of said images on self-developing photographic print film comprising, in combination, a housing having means to receive a slide tray adapted to hold a plurality of photographic slide transparencies; a projection gate disposed within the housing for receiving slide transparencies from a slide tray; means for sequentially transporting each slide between a tray disposed on the housing and the projection gate; a projection lamp disposed within the housing to illuminate a slide within the projection gate and defining therewith an optical axis; a magazine disposed in the housing in a position spaced apart from the optical axis for holding a pack of instant print photographic film; a projection lens movably disposed within the housing between a projection position on the optical axis for focusing the image of a slide in the projection gate on a remote screen and a neutral position spaced apart from the optical axis; a copy lens mounted within the housing for movement between the copy position disposed on the optical axis for focusing the image of a transparency within the projection gate on the photo-sensitive surface of film in the magazine and a neutral position spaced apart from the optical axis; image directing means operatively connected to the copy lens for creating an optical path to the film surface in the copy position; a shutter disposed in a position to normally prevent the passage of light through the copy lens; a carriage means pivotally mounted in the housing on which is mounted the projection lens, the copy lens, the image directing means and the shutter for their simultaneously movement between the projection position and the copy position; and a spring-urged actuating lever to normally hold the carriage slide projection position, operatively connected to the carriage means to effectuate such movement and activate the shutter in the copy position.

4,260,248

ELECTROPHOTOGRAPHIC COPYING APPARATUS EQUIPPED WITH COPYING COVERAGE INDICATION DEVICE

Tomoji Murata, Toyokawa; Kenji Shibazaki, Aichi; Kenichi Arai, Nakano, and Tsuneo Kitagawa, Toyohashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 6, 1979, Ser. No. 18,052
Claims priority, application Japan, Mar. 9, 1978, 53-27248
Int. Cl.³ G03G *15/00*; G03B *27/52*
U.S. Cl. 355—60 **9 Claims**



1. In an electrophotographic copying apparatus which includes an original platform of transparent plate material, a scanning optical system which scans an original placed on said original platform while illuminating the original from the under face of said original platform for directing a lightwise image of said original onto a photoreceptor, means for varying the scanning speed of said scanning optical system corresponding to various different copying magnifications, and copy paper mounting means which is capable of loading thereon a plurality of different sizes of copy paper, the improvement comprising:

(a) means for selecting a desired one of said various copying magnifications;

(b) magnification detecting means for detecting the said magnification selected by said copying magnification selecting means and for emitting a signal representative thereof;

(c) size detecting means for detecting the size of the copy paper loaded on said copy paper mounting means and for emitting a signal representative thereof;

(d) area judging means for receiving said signals from said magnification detecting means and said size detecting means, for judging, based on said signals, the area available on a plane including said original platform for imaging an original to form a copy on said detected size copy paper, and for generating an output representative thereof;

(e) indication means for indicating adjacent said original platform said judged area available for copying as a function of said output of said area judging means; and

(f) means for detecting the existence of a condition such that said judged area available for copying, as judged by said area judging means, has exceeded the actual area of said original platform within said plane available for copying and such that copying of an original placed on said actual area of said original platform would result in a copy being formed on only a portion of said detected size copy paper and for generating an indication representative of said condition.

4,260,249

TWO SLIT ILLUMINATION APERTURE

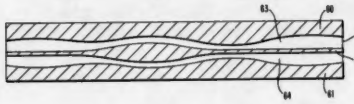
John D. Armitage, Jr., Longmont, Colo., and Wilson M. Routt, Jr., Lexington, Ky., assignors to International Business Machines, Armonk, N.Y.

Filed Sep. 17, 1979, Ser. No. 75,926
Int. Cl.³ G03B *27/54, 27/70*
U.S. Cl. 355—67 **8 Claims**

1. An electrophotographic machine comprising:

a document platen for holding a document to be copied;

a photoreceptive surface with an exposure area for receiving an image of said document;
a light source;
light reflecting and transmissive means to form a light path and cause light from said source to carry an image of said document to said photoreceptive surface; and



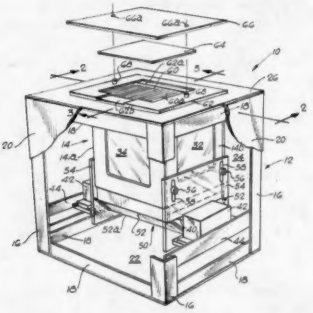
aperture means in said light path to shape the profile of said light so that said photoreceptive surface receives substantially constant exposure across said area, said aperture means comprising three pieces, a centerpiece placed between two outer pieces so as to form two variable width light transmitting slits.

4,260,250

IMAGING APPARATUS

Mark H. McCormick-Goodhart, Grosse Pointe, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Continuation of Ser. No. 961,693, Nov. 17, 1978, abandoned.
This application Apr. 11, 1980, Ser. No. 139,179
Int. Cl.³ G03B *27/16, 27/54*
U.S. Cl. 355—113 **8 Claims**



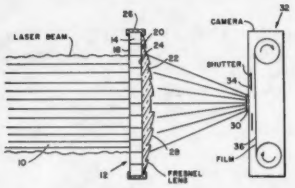
1. Apparatus for flash imaging an imaging film having a layer of an energy dispersible image forming material thereon, comprising: an energy source in the form of a flash tube capable of emitting electromagnetic energy of an intensity sufficient to cause dispersion of the energy dispersible image forming material on the imaging film, imaging film support means positioned in spaced relation to the flash tube for enabling electromagnetic energy from the flash tube to be applied to the imaging film in a preselected pattern, electromagnetic energy collecting and channeling means for directing energy from the flash tube to the imaging film at the film support means, said electromagnetic energy collecting and channeling means including a hollow electromagnetic energy passageway and guideway, the longitudinal axis of which is substantially transverse to the longitudinal axis of the flash tube, for intercepting and entrapping a maximum amount of the electromagnetic energy from the the flash tube and directing it to the imaging film whereby substantially the full intensity of the electromagnetic energy is applied to the imaging film thereby enabling rapid and substantially uniform dispersion of the energy dispersible imaging forming material on the film, in a preselected pattern, to be achieved, and adjustable electromagnetic energy collecting and reflecting means positioned adjacent to the flash tube and between the ends thereof in opposed relation to the hollow passageway and guideway of the electromagnetic energy collecting and channeling means, said energy collecting and reflecting means acting to intercept energy from the flash tube and reflect it toward the hollow passageway and guideway of the energy collecting and channeling means and being adjustable toward or away from the flash tube to provide for achieving greater uniformity of electromagnetic distribution at the imaging film plane.

4,260,251

IRRADIANCE ANALYZER FOR HIGH POWER LASERS

Raymond W. Conrad, Russellville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 1, 1979, Ser. No. 80,649
Int. Cl.³ G01J *1/00, 1/58*
U.S. Cl. 356—121 **5 Claims**



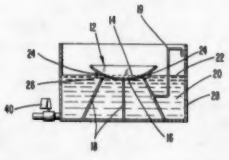
1. An irradiance analyzer for high power lasers comprising an array made of a multiplicity of visibly transparent, cleanly ablating material rods which are opaque to laser radiation and which emit visible radiation when heated by said laser radiation and secured together to form an entrance end on one end of the array and an exit end that is polished on the other end of the array, a Fresnel lens having a surface with securing means mounting the surface of the Fresnel lens to the polished surface of the array, and the Fresnel lens having another surface for focusing light to a film plane and a camera for photographing an image at the film plane.

4,260,252

METHOD AND APPARATUS FOR IMMOBILIZING A CONTACT LENS

Sidney Wittenberg, 52 Surrey La., Sudbury, Mass. 01776

Filed Nov. 27, 1979, Ser. No. 97,639
Int. Cl.³ G01N *21/01*
U.S. Cl. 356—124 **16 Claims**

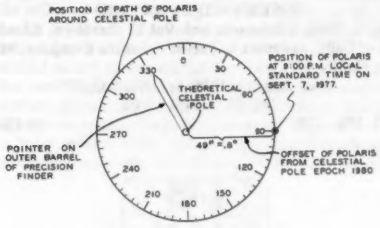


1. An apparatus for immobilizing a contact lens comprising:
(a) a support means having an aperture therethrough, the plane of the aperture being generally horizontal, the aperture also having a diameter less than the diameter of the lens;
(b) liquid surrounding the support means;
(c) means for containing the liquid such that it surrounds the supporting means; and
(d) means for placing said lens on the surface of said liquid such that the lens can be immobilized by balanced surface tension forces between the lens and the portion of the support means defining the aperture.

4,260,253
PRECISION CELESTIAL POLE LOCATOR

Roger W. Tuthill, 11 Tanglewood La., Mountainside, N.J. 07092

Filed Sep. 27, 1977, Ser. No. 837,205
Int. Cl.[3] G01B *11/27*; G02B *23/00*
U.S. Cl. 356—153 5 Claims

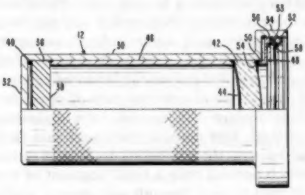


1. A device for aligning the axis of rotation of an astronomical instrument with the earth's axis of rotation comprising, a finder having its optical axis angularly offset with respect to its mechanical axis by an angle equal to the angular offset of a reference star from the Celestial Pole, means for rotating the plane formed by said optical and mechanical axes to match the orientation of said reference star about the Celestial Pole, and means for aligning said optical axis with said reference star.

4,260,254
COMPACT BORESIGHT TESTER FOR LASER DESIGNATORS

Leroy O. Braun, Redondo Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Apr. 30, 1979, Ser. No. 34,117
Int. Cl.[3] G01B *11/27*; G02B *17/00*
U.S. Cl. 356—154 5 Claims



1. A device for testing the boresight alignment of a laser designator comprising:

a housing having a closed end and an open end;

a target member disposed within said housing adjacent to said closed end and defining a target surface facing said open end, said target surface being of a material capable of emitting visible light when irradiated with laser light;

a lens disposed within said housing at a location spaced from said target member and having a reflective coating on its surface facing said target surface for directing a portion of the laser light entering said housing through said open end toward said target surface such that after a predetermined number of relections from said target surface and said reflective coating said portion of said laser light is focused to a small area on said target surface;

a hollow spacer member disposed within said housing between said target member and said lens in abutting relationship with said target member and said lens, said spacer member being of a material having a thermal coefficient of expansion substantially matching that of said lens;

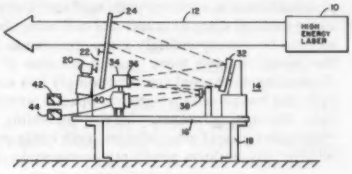
means for firmly holding said target member, said spacer member, and said lens within said housing; and

attachment means disposed near said open end of said housing for facilitating attachment of said device to a laser designator.

4,260,255
HIGH ENERGY LASER BEAM SAMPLING METER

John J. Wachs, and Andrew H. Jenkins, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 22, 1979, Ser. No. 87,117
Int. Cl.[3] G01J *1/42*
U.S. Cl. 356—222 6 Claims

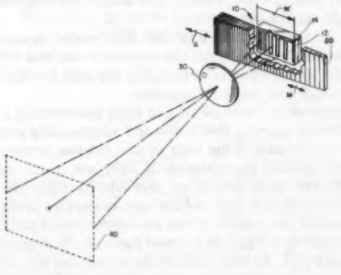


1. A high energy laser beam sampling apparatus comprising: a wheel rotatably mounted in a laser beam, said wheel being in angular relation with an axis of said beam to reflect a portion of said beam therefrom by reflective ribs which have edges from which the beam portion is reflected; means for rotating said wheel at a predetermined spin rate; a first collecting and focusing means disposed for receiving and reflecting said portion of said beam therefrom; a low level energy detector having a hole grating over an input face thereof and said low level energy detector and said hole grating receiving said portion of said beam from said first collecting and focusing means and providing a signal from said low level energy detector which is porportional to the intensity of said beam; said hole grating having a reflective face thereon which reflects a portion of said beam which strikes said reflective face and reflects such portion to a second collecting and focusing mirror, said second collecting and focusing mirror re-reflecting the laser beam portion received to a low level power detector; first indicator means connected to said low level energy detector for detecting the low level energy of the reflected laser beam; and a second indicator means connected to said low level power detector for receiving the signal produced by the low level power detector.

4,260,256
APPARATUS FOR MEASURING ILLUMINANCE

David C. Smart, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 17, 1978, Ser. No. 961,800
Int. Cl.[3] G01J *1/40*, *1/42*; H01J *40/14*
U.S. Cl. 356—235 4 Claims



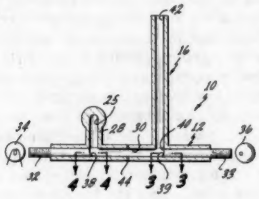
1. In apparatus for use in measuring the intensity of light along an optical path, said apparatus including:

a photoelectric cell;
an optical lens disposed in the optical path between said photoelectric cell and a scene;
light attenuating means having a gradation of opacity along a dimension extending generally transversely to said optical path, said means being disposed in the optical path for relative movement along a predetermined movement path that is generally transverse to the optical path to provide different degrees of transmittance to light traveling along the optical path, the improvement comprising:
means providing said photoelectric cell with a gradation of sensitivity to light along one dimension extending generally transversely to said optical path and generally parallel to said movement path, said sensitivity varying along said cell dimension and said cell being so disposed so as to be correspondingly more sensitive to light that has passed through more opaque portions of the light attenuating means and correspondingly less sensitive to light that has passed through less opaque portions of the light attenuating means, thereby providing variable attenuation at said photoelectric cell while preserving substantially uniform sensitivity across said cell.

4,260,257
FLOW CELL

William E. Neeley, 6152 Cardeno Dr., La Jolla, Calif. 92037, and Hugh Y. Yee, 4201 Frostwood Ct., Troy, Mich. 48098

Filed May 29, 1979, Ser. No. 42,789
Int. Cl.³ G01N *21/05*
U.S. Cl. 356—246 **6 Claims**

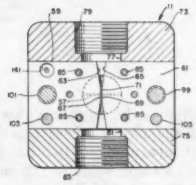


1. A flow cell for location intermediate a light source and a photosensitive device for light measurement of a fluid therein in a light path, comprising:
a body member having an open-ended bore therethrough constituting a sight passageway to lie along a portion of the length of the light path of a colorimeter;
fluid inlet means transversely connected to said open-ended bore intermediate its ends;
fluid outlet means transversely connected to said open-ended bore intermediate its ends;
said fluid inlet means and said fluid outlet means being longitudinal spaced a predetermined distance along the axis of the open-ended bore of said body member;
a pair of fluid seals in the respective open ends of said bores and closing them, each of said seals being constituted by a light transmitting rod;
said fluid inlet means and said fluid outlet means opening into said bore adjacent the respective internal ends of said light transmitting rods to define the path for fluid flowing through said sight passageway;
the internal end surface of said light transmitting rods have a central portion that is flat and substantially perpendicular to the axis of the bore of said tubular member to provide optimal transmission of light and a curved surface adjacent their perimeter that blends with the interior surface of said bore where said respective surfaces meet much in the manner of the meniscus curved surface that is formed by a liquid in a vessel due to surface tension of the liquid with the side walls of the vessel, the internal ends of said light transmitting rods being fused to the interior walls of said bore; and debubbler means comprising a tubular portion having a first aperture in its bottom surface, a tubular neck having its top end connected to said first aperture and its bottom end connected to said fluid inlet means.

4,260,258
COMPACT, RUGGED SENSOR FOR OPTICAL MEASUREMENT OF THE SIZE OF PARTICLES SUSPENDED IN A FLUID

Dennis H. Rose, Claremont, and Val E. Davidson, Glendora, both of Calif., assignors to Pacific Scientific Company, Montclair, Calif.

Filed Aug. 14, 1978, Ser. No. 933,627
Int. Cl.³ G01N *15/02*
U.S. Cl. 356—335 **18 Claims**



1. A rugged sensor for measuring the size of particles carried by a fluid stream flowing through a conduit, comprising:
a light emitting diode which provides a point source of illumination;
an optical system positioned adjacent said light emitting diode with its focal point at said diode point source, said optical system providing a parallel beam of light from said light emitting diode;
a flow channel, connected to said conduit with a portion of said channel having a width narrow relative to the width of said conduit, said narrow portion of said flow channel formed between a pair of opposite wall surfaces, and located for illumination by said beam of light;
a wall member forming a third wall of said narrow portion of said flow channel, said wall member being opaque except for a transparent slit, narrow in width relative to its length, and oriented perpendicular to said narrow portion of said flow channel and said pair of opposite wall surfaces, said narrow slit located for illumination by said beam of light, said narrow portion of said flow channel and said narrow slit combining to form a restricted light path which permits only a small segment of said parallel beam of light to pass through said narrow portion of said flow channel, said segment limited in one dimension by said narrow width of said narrow portion of said flow channel and in a second imension by said narrow width of said slit;
said conduit conducting particle bearing fluid to said flow channel; and
a light sensitive detector positioned adjacent said narrow portion of said flow channel for illumination by said beam of light, the electrical output of said detector being responsive to particles in said narrow portion of said flow channel.

4,260,259
METAL ETCH RATE ANALYZER

Joseph P. Kirk, Chelsea, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,571
Int. Cl.³ G01B *9/02*
U.S. Cl. 356—357 **5 Claims**

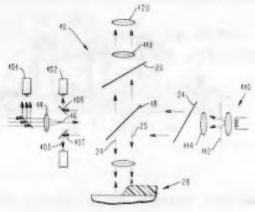
1. An interferometer system for determining the etch rates of an opaque material and an overlying transparent layer which partially masks the opaque material comprising:
a light source having a wavelength λ,

beam splitter means for dividing light from said source into a first beam directed along a first beam path onto the free surface of said opaque material in a direction perpendicular to the opaque surface, and a second beam directed along a second beam path onto the surface of the transparent layer in a direction perpendicular to the transparent surface,

said beam splitter means defining a first return light path for the reflected light returning from the surface of the transparent layer and the underlying surface of the opaque material, and

a second return light path for the light reflected from the free surface of the opaque layer and from the underlying surface of the opaque material, the first and second return light paths being of substantially equal length,

said beam splitter means including a neutral beam splitter oriented at an angle with respect to said light source and



the surface of said opaque material to direct light thereon, and first and second beam splitters each oriented at an angle with respect to said neutral beam splitter to define a closed light path for the equal length light paths,

a first detector means located in the first return to measure and record the change in light intensity of the interfering reflected beams as a function of time with one period of oscillation of the light intensity corresponding to a thickness change in the transparent layer of $\lambda/2n$ where n is the refractive index of the transparent layer,

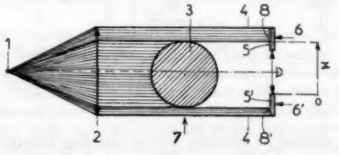
a second detector means located in the second return path to measure and record the change in light intensity of the interfering reflected beams as a function of time with one period of oscillation of the light intensity corresponding to the removal of an opaque layer thickness of $\lambda/2-\Delta X(n-1)$, where ΔX is the thickness change of the transparent layer during the same period of time.

4,260,260

PROCESS FOR CHECKING THE DIMENSION OF A PART

C. A. Letort, Boulogne; Helenio Llop, and B. Grandjacques, both of Montreuil, all of France, assignors to Societe d'Optique, Precision Electronique et al Mecanique-SOPELEM, Paris, France

Filed Apr. 14, 1978, Ser. No. 896,673
Claims priority, application France, Apr. 25, 1977, 77 12453
Int. Cl.³ G01B *11/04, 11/10*
U.S. Cl. 356—385 **7 Claims**



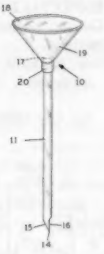
1. An automatic process for checking a dimension of a part comprising illuminating a part to be checked by a parallel beam having a width greater than the dimension of the part to be checked whereby only a portion of the beam can be obscured by the part, passing said part through said beam with a continuous movement in a direction perpendicular to said beam, projecting a profile of said part onto an optical receiver unit, said optical receiver unit comprising at least one pair of photoelectric cells which are placed in a plane perpendicular to said beam and are separated from one another by a distance which is such that, when said part passes through said beam in a continuous movement perpendicular to said beam, said part passes into a zone in which said two cells are both partially obscured, and the measurement of the sum of the areas of the illuminated surfaces of the two cells is effected when the difference between the areas is zero.

4,260,261

OPTICAL FOOD PROBE

Walter J. Mann, Little Neck, and Aaron A. Rosenblatt, New York, both of N.Y., assignors to QED, Chappaqua, N.Y.

Filed Jul. 23, 1979, Ser. No. 59,554
Int. Cl.³ G01J *3/46*
U.S. Cl. 356—402 **10 Claims**



1. An image transmitting food probe or the like for determining the state of readiness of food, comprising

(a) an optical rod having an upper end and a a lower end,

(b) said upper end having a receiving surface such that an image transmitted through the rod from the lower portions thereof will be visible at said receiving surface,

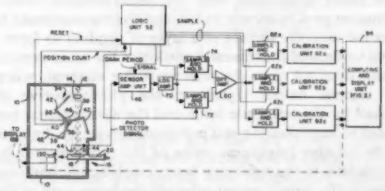
(c) said lower end having a penetrating portion and a planar image-receiving surface for transmission of color into the rod.

4,260,262

GRAIN QUALITY ANALYZER

Donald R. Webster, Laurel, Md., assignor to Neotec Corporation, Silver Spring, Md.

Filed Nov. 28, 1978, Ser. No. 964,191
Int. Cl.³ G01N *21/27*
U.S. Cl. 356—418 **13 Claims**



1. A photo-optical analyzer for optically determining a value

representative of the percentage protein in an agricultural product test sample, said analyzer comprising:

means for irradiating an agricultural product test sample with light energy the wavelength of which sweeps across a preselected wavelength range including a sub-range in which the optical density of the test sample is known to vary as a function of the percentage protein in the test sample and another preselected sub-range in which the optical density of the sample is known to be substantially independent of the percentage protein in the sample;

light responsive means positioned to detect a portion of the light energy after having irradiated the test sample;

computational means connected to said light responsive means for determining a value representative of the percentage protein in the test sample including means for computing a ratio of the difference between the common logarithm of the optical density at first and second spaced points in said first-mentioned sub-range to the difference between the common logarithm of the optical density at first and second spaced points in said second-mentioned sub-range.

4,260,263

PROCESS AND APPARATUS FOR MEASURING THE BRIGHTNESS OF MILL-COMMINUTED PRODUCTS, ESPECIALLY FLOUR

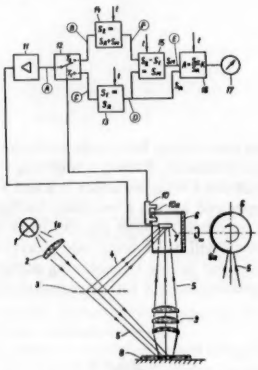
Emanuel Kummer, Gossau, Switzerland, assignor to Gebrueder Buehler AG, Switzerland

Filed Mar. 30, 1979, Ser. No. 25,674

Claims priority, application Switzerland, Sep. 29, 1978, 10189/78

Int. Cl.[3] **G01N** *21/55*

U.S. Cl. 356—448 **12 Claims**



1. In a process for measurement of the brightness of comminuted products from a mill, especially flour, by means of a photosensitive element for conversion of light beams into electric signals, wherein at least one light beam is split into at least a first part-beam comprising a reference beam and a second part-beam comprising a measurement beam, the reference beam is directed onto the photosensitive element for formation of a reference value, and the measurement beam is directed onto the surface of a layer of product to form a measured value, and the returned portion of the measurement beam is also directed onto the photosensitive element, whereupon the electric output signals of the photosensitive element evoked by the reference beam and the measurement beam are passed to an evaluating and indicating device for determination of the relative brightness value of the measurement beam in comparison to the reference beam reaching the photosensitive element, the improvement wherein the beam path of the measurement beam is cyclicly broken into at least two essentially time-shifted measurement phases such that only the reference beam of the two part-beams strikes the photosensitive element during a first measurement phase, and

such that during a second measurement phase both the reference beam and the returned portion of the measurement beam strike the photosensitive element, and at least one output signal of the photosensitive element during one measurement phase is intermediately stored and is compared with at least one subsequent output signal of the other measurement phase.

4,260,264

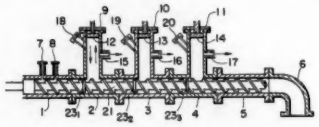
BIAXIAL VENT EXTRUDER

Yoshiki Maki, Hiroshima; Atsushi Idemoto, Kure, and Norimasa Oda, Hiroshima, all of Japan, assignors to The Japan Steel Works Ltd., Tokyo, Japan

Filed May 22, 1979, Ser. No. 41,465

Int. Cl.[3] **B29B** *1/10*

U.S. Cl. 366—75 **6 Claims**



1. A biaxial vent extruder for processing slurry-like waste fluid or radioactive waste fluid comprising:

a hopper cylinder having a solidifying substance port and a solidified substance port;

a plurality of vent cylinders each having a vent port provided with plunger type scraper means;

an extruding cylinder having a single opening for a main screw, said hopper vent and extruder cylinders being continuously connected;

said main screw extending to the upstream end of the extruding cylinder;

a sub-screw extending through said hopper and vent cylinders and terminating prior to the extruding cylinder, said screws each having a fullflight for engagement with the other; and

a set of rings being mounted on said main screw and said sub-screw near respective vent port inlets, said screws being rotated in opposite directions and inwardly with respect to the vent ports.

4,260,265

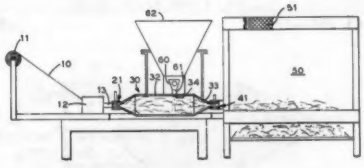
FIBER-RESIN BLENDING TECHNIQUE

Delmar A. Faverty, Alliance, and Robert E. Shuck, North Canton, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Jul. 7, 1978, Ser. No. 922,608

Int. Cl.[3] **B01F** *13/02*

U.S. Cl. 366—101 **5 Claims**



1. A method of forming fibrous molding compositions of resin impregnated fibers for fiber-reinforced resin composites comprising the steps of first chopping continuous fibrous tows into discontinuous tows of fiber segments, then conveying said discontinuous tow of fiber segments through a flow accelerat-

ing device by entraining said discontinuous tow of fiber segments in a motive fluid to form fluidized fibers to accelerate the flow rate of the fluidized fibers, then discharging the discontinuous tow of fluidized fiber segments and motive fluid into a mixing chamber whereby said fluidized fiber segments are randomly expanded and dispersed, and then passing the randomly expanded and dispersed fibers through said mixing chamber, and injecting dry powdered resin directly into the mixing chamber so as to impregnate the randomly dispersed fluidized fiber segments with the powdered resin, then passing the resin impegnated fluidized fibers through a second flow accelerating device.

4,260,266

MIX HEAD FOR THE PRODUCTION OF A FOAMABLE REACTION MIXTURE FROM FLUID COMPONENTS

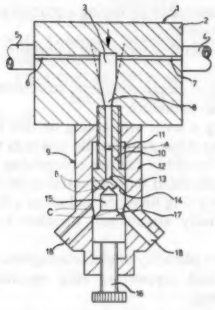
Rudolf Rudhart; Klaus Schulte, both of Leverkusen; Werner Dietrich, and Heinz Decker, both of Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 6, 1979, Ser. No. 45,884

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1978, 2828505

Int. Cl.³ B01F *5/06, 15/02*

U.S. Cl. 366—336 **4 Claims**



1. A mix head for the production of a foamable reaction mixture from fluid components, comprising a mixing chamber communicating with feed pipes for the fluid components, a distributor member with a plurality of outlets attached to the outlet of said mixing chamber, said distributor member consisting of a housing enclosing a central chamber in which a connecting pipe is longitudinally displaceable, outlet bores being arranged inside said housing behind the outlet end of the connecting pipe, and a distributor cone mounted on a set screw provided opposite the outlet end of said outlet pipe.

4,260,267

POWER DRIVEN FLUID DISPLACEMENT APPARATUS

Arthur Walton, 517 W. 17 St., Long Beach, Calif. 90813

Filed Aug. 3, 1979, Ser. No. 63,174

Int. Cl.³ B01F *7/16*

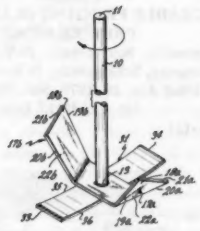
U.S. Cl. 366—343 **2 Claims**

1. In a power driven fluid displacement apparatus comprising:

a longitudinal shaft having a first and second end, said first end adapted to be rotatively effectively driven by a driving motor, said longitudinal shaft being provided with projecting blades including at least a first blade portion positioned on one side of said longitudinal shaft and a second blade portion positioned on the other side thereof in symmetrically balanced relationship and with each of said first and second blade portions having an outer pushing part provided with a leading edge and a trailing edge and an outer tip edge interconnecting said leading and trailing edges and being deflected axially forwardly from a true transverse plane perpendicular to said longitudinal shaft and twisted so as to have said leading edge positioned along an outwardly and axially forwardly inclined edge line axially forwardly displaced from a similar outwardly and axially forwardly inclined edge line coincident with the corresponding trailing edge;

each of said pushing parts having a rear pushing surface inclined axially forwardly and rotatively forwardly in the direction of rotation toward said leading edge and inclined axially forwardly and outwardly in a radial direction away from said longitudinal shaft,

said projecting blades being fixedly attached to the second



end of said longitudinal shaft, the improvement comprising:

a bar fixedly attached to the bottom of said projecting blades,

said bar having longitudinally untwisted top and bottom surfaces and a first and a second pair of edges, said second pair of edges being longer than the first pair of edges,

said bar being attached to said projecting blades such that the center of said projecting blades is directly over the center of said bar, wherein the top surface of said bar abuts said projecting blades,

said second pair of edges being defined by parallel vertical planes,

said first pair of edges defining free ends of said bar.

4,260,268

DEVICE FOR DRIVING DOT PRINTING BARS IN A DOT PRINTER

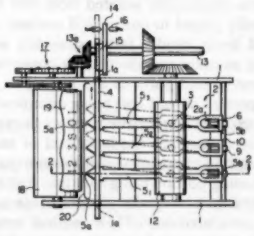
Kiyoyuki Arai, Tokyo, Japan, assignor to Copal Company Limited, Tokyo, Japan

Filed May 24, 1979, Ser. No. 42,034

Claims priority, application Japan, May 29, 1978, 53/064141

Int. Cl.³ B41J *3/12*

U.S. Cl. 400—121 **3 Claims**



1. A device for driving dot printing bars in a dot printer comprising a platen holding and feeding a recording paper, a plurality of parallel and spaced bars reciprocally movable between an inoperative position for striking against the paper to effect dot printing on the paper, said bars being normally

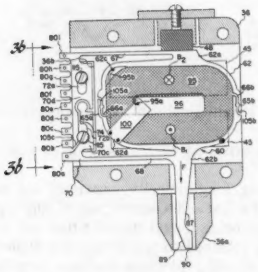
urged to said inoperative position by spring means, a rotary friction roller facing said bars in a predetermined spaced relationships to the bars, a plurality of electromagnetic devices operating said bars to cause the bars to contact said rotary friction roller whereby when a selected one of the electromagnetic devices is energized, that device causes the corresponding bars to contact said rotary friction roller to thereby move said bar from said inoperative position to said operative striking position.

4,260,269

SPLIT STACKABLE PRINTING BLADES FOR MATRIX PRINTER HEAD

Donald C. Peroutky, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 25, 1979, Ser. No. 51,727
Int. Cl.³ B41J *3/10*
U.S. Cl. 400—121 **12 Claims**



1. In a printing blade of the type having an oval conductive rim with an oval aperture therein in which a flat-wound coil is retained, said blade having a printing tip extending outwardly from one side of said rim, and a mounting portion spaced from said rim and substantially parallel to said printing tip extension, and a pair of substantially parallel resilient elongated arms each extending from an opposite end of said mounting portion to associated opposite points on said rim, the improvement comprising:

said rim having a pair of formations lying generally along an imaginary line passing through said oval rim aperture and substantially parallel to the direction of elongation of said resilient arms, said formations being cut completely though said rim to form said rim into first and second portions electrically isolated from one another and each integrally joined to one of said resilient arms;

said coil being rigidly fastened within said aperture and having an outer end electrically connected to one of said first and second portions and having an inner end, a central aperture of said coil being completely devoid of any conductive or supportive member therein;

means for connecting the inner end of said coil to the remaining one of said first and second rim portions;

said mounting portion being split into first and second coplanar parts each integrally joined and electrically connected to an associated one of said resilient arms; and

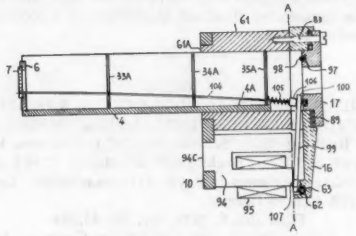
means formed on said first and second parts of said mounting portion for facilitating a flow of electrical current, introduced into one mounting portion part, through a first one of said resilient arms into a first end of said coil and from the remaining end of said coil through the remaining resilient arm to the remaining one of said first and second mounting portion parts.

4,260,270

MOSAIC PRINTING HEAD

Pier G. Cavallari, Novara, Italy, assignor to Honeywell Information Systems Italia, Caluso, Italy

Filed Sep. 11, 1979, Ser. No. 74,264
Claims priority, application Italy, Sep. 11, 1978, 27496 A/78
Int. Cl.³ B41J *3/12*
U.S. Cl. 400—124 **3 Claims**



1. An impact matrix printing head adapted to be mounted on a printing carriage for providing an impression against a platen, including:

a needle guiding assembly,

said needle guiding assembly including a plurality of needles;

an electromagnet assembly,

said electromagnet assembly including a plurality of electromagnetic structures,

each of said plurality of electromagnetic structures including a pole piece and an armature;

said armature having a lever arm acting on one of said plurality of needles to drive said needle towards the platen;

said electromagnet assembly further comprising a supporting ring member provided with a central cylindrical bushing, said supporting ring member including a first locking means to structurally attach said member to the print carriage;

the pole pieces of said plurality of electromagnetic structures being fixed on said supporting ring member radially around said bushing;

a disk shaped armature retainer having a central portion contacting said bushing and a peripheral portion, said peripheral portion having means for positioning said armatures contiguous to said pole pieces;

a circular cap;

second locking means for fixing said cap to said bushing through interposition of said central portion of said armature retainer;

first resilient means interposed between said cap and said central portion of said armature retainer and adjustably compressed by the action of said second locking means;

second resilient means mounted in the central portion of said cap,

said second resilient means contacting one end of said armatures, whereby the adjustable compression of said first resilient means allows for the adjustment of the air gap width of said electromagnetic structures, and whereby said first locking means allows for the adjustment of the distance of said electromagnetic assembly from the printing platen.

4,260,271

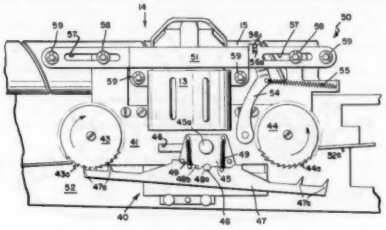
INKED RIBBON ADVANCEMENT MECHANISM

Nicholas Kondur, Jr., Riverton, Wyo., assignor to C. Itoh Electronics, Los Angeles, Calif.

Filed Jun. 2, 1978, Ser. No. 912,087
Int. Cl.³ B41J *33/14*
U.S. Cl. 400—232 **5 Claims**

1. An inked ribbon advancement mechanism which is used in combination with a printer having a movable print head, said

inked ribbon advancement mechanism comprising advancing means for continuously advancing an increment of an inked ribbon in response to the position of the movable print head,



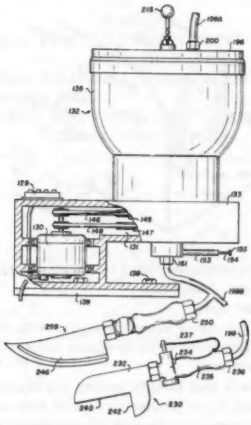
said advancing means moving the increment of inked ribbon proportionally to the movement and the direction of the movable print head so that the increment of inked ribbon is used twice as the movable print head travels forward and backward.

4,260,272

PROCESSOR AND DISPENSER

Maurice G. N. G. Lebecque, Burnaby, Canada, assignor to Irene E. M. Lebecque, Burnaby, Canada

Filed Oct. 18, 1979, Ser. No. 86,230
Int. Cl.[3] B05C *17/00*
U.S. Cl. 401—4 **11 Claims**



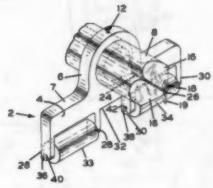
1. A processor comprising:
a base member;
inner and outer concentric tubular shafts extending vertically upwards from the base member;
means for rotating the shafts in opposite directions;
a container mounted on the base and connectable to the outer shaft for rotation therewith;
an impeller member within the container and connected to the inner shaft for rotation therewith, the impeller member and the inner shaft having adjacent apertures so the inside of the container communicates with the inside of the inner shaft; and
valve means for controlling the flow of material through the apertures of the impeller member and inner shaft and downwardly through the inner shaft.

4,260,273

SEAM SEALER APPLICATOR ATTACHMENT

William R. Hemperly, Jr., Lancaster, Pa., and Harry A. Singer, Cincinnati, Ohio, assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Sep. 13, 1979, Ser. No. 75,011
Int. Cl.[3] E04F *21/20*; B43M *11/02*
U.S. Cl. 401—48 **1 Claim**



1. In a device for applying liquid adhesive to a seam between adjacent edges of floor covering comprising a container for liquids, a nozzle, and means for fastening said nozzle to said container, said nozzle having an elongated body portion with a centrally located passageway extending completely through the length thereof, the end of the body opposite from the fastening means being tapered and having an opening at the extreme end thereof interconnected with the passageway through the elongated body portion of the nozzle and, a parting fin located closely adjacent to and below said opening and extending downwardly from the tapered end of said nozzle at right angles to the longitudinal axis thereof, the improvement comprising a support plate having a one-piece generally rectangular main body portion with flat front and rear surfaces, an integral collar extending upwardly from the top edge thereof, means for adjustably and removably securing said collar on the elongated body portion of said nozzle so that the main body portion of said support plate extends downwardly below said nozzle in a plane perpendicular to the longitudinal axis thereof, mounting means comprising integral pairs of longitudinally spaced projections on each side of the bottom edge of the main body portion of the support plate, and a pair of cylindrical rollers one of which is mounted between each pair of projections, said rollers being rotatably positioned on the mounting means and being so mounted and each having a diameter sufficient to cause the outer surface thereof to extend outwardly beyond the thickness and the lower edge of the projections whereby, in use, the rollers and the tapered end of the nozzle provide a three-point contact means for stabilizing, supporting, and maintaining the seam sealing device at a predetermined desired angle to the surface of the floor covering with the opening in the extreme end of the nozzle positioned in the desired relationship to the seam to be sealed.

4,260,274

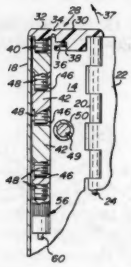
BINDER WITH MAGAZINE STORAGE AND HAND TOOL

Scott R. Penniman, Lansdale, Pa., assignor to REP Industries, Inc., Lansdale, Pa.

Filed Apr. 17, 1980, Ser. No. 141,012
Int. Cl.[3] B42F *13/12*
U.S. Cl. 402—80 R **4 Claims**

1. In a binder the improvement comprising a hollow elongated housing closed at its ends, one end of said housing being closed by a removable cap, a plurality of threaded posts connected end to end in said housing, one of said posts being connected to said cap, a tool having one end connected to the post remote from said cap, the other end of said tool having a

projection adapted to engage a mating structure on a post to facilitate rotation of a post about its axis, whereby removal of



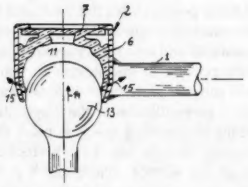
the cap will facilitate removal of all of the posts and said tool therewith.

4,260,275

BALL AND SOCKET JOINT AND ITS METHOD OF CONSTRUCTION

Andre Chevallier, Chemin de Pre-Morin, Corenc le Haut-La Tronche, Isere, France

Filed Sep. 7, 1978, Ser. No. 940,179
Claims priority, application France, Sep. 8, 1977, 77 27685
Int. Cl.[3] F16C *11/06*
U.S. Cl. 403—133 **12 Claims**



1. A socket of a ball and socket joint comprising:

(a) a rigid housing, comprising an open end and a closed end, a reduced diameter section at the open end in communication with an enlarged section inward from the closed end;

(b) a bearing located in the housing, the bearing being formed from a resilient material complementary to the housing and having a part spherical integral seating surface and an opening at the open end to receive a ball, a peripheral opening formed in the bearing between the bearing and housing positioned inward from the open end past the spherical surface center;

the bearing having an elasticity in the axial direction during the insertion of a ball such that the bearing is capable of movement in the axial direction relative to the rigid housing partially filling the peripheral opening; and

said axial movement positioning the open end in the enlarged section allowing the opening to distend and enlarge to receive the ball.

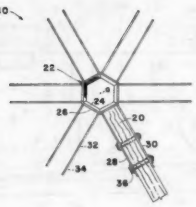
4,260,276

GEODESIC DOME CONNECTOR

Martha E. Phillips, 3906 Ridgecroft Rd., Baltimore, Md. 21206

Filed Apr. 16, 1980, Ser. No. 140,854
Int. Cl.[3] F16B *7/00*
U.S. Cl. 403—172 **2 Claims**

1. In a system for geodesic dome connection of chord-deployed elongate members at a juncture, including an axis-symmetrical connector having pairs of jaws radiating in directions away from a central ring of polygonal shape, the improvement comprising: the central ring having the shape of a truncate-pyramid with base end and truncate end, the truncate-pyramid shape having respective facets about an axis, said facets inclined respectively at right angles to the direction of



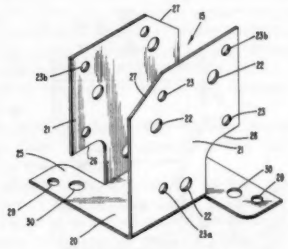
chords of chord-deployed elongate members to be connected to said system, respective pairs of laterally opposed jaws extending at right angles in generally radial direction from integral connection directly with respective said facets, and means for compressing each pair of jaws on an elongate member.

4,260,277

BRACKET FOR WOODEN STRUCTURES

Phillip D. Daniels, 4979 Lake Bluff Rd., West Bloomfield Township, Oakland County, Mich. 48033

Filed Sep. 6, 1979, Ser. No. 73,074
Int. Cl.[3] F16B *9/00*
U.S. Cl. 403—235 **2 Claims**



1. A bracket for interconnecting two mutually perpendicular structural members, comprising:

a central planar web;

a pair of parallel planar flanges integral with said web and projecting therefrom to lie in planes substantially normal to that of said wall;

one edge of each said flanges having cut therefrom, at the corner defined by its juncture with said web, an essentially rectangular support extension of appreciably less extent than one half the extent of its respective flange in both its height and breadth dimensions, so as to minimally detract from the support of one of said members throughout the full height and breadth dimensions of said flanges;

each such extension being deflected from the plane of the respective flange to be co-planar with said central web.

4,260,278

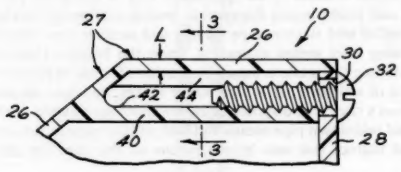
FASTENING ASSEMBLY

Johnny W. Yartz, Anchorage, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 18, 1978, Ser. No. 970,703
Int. Cl.[3] B25G *3/00*
U.S. Cl. 403—260 **12 Claims**

1. A fastening assembly comprising first and second abutting structural members, said first member including a wall section

of predetermined thickness and having at least one exposed surface; a mounting boss formed integrally with said wall section and extending from the opposite side of said exposed surfaces; said boss having a longitudinally extending cavity formed therein generally parallel to said exposed surface, said



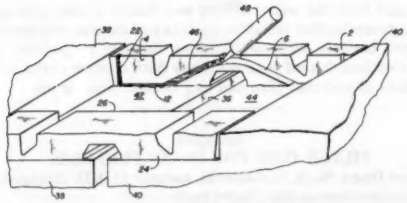
cavity disposed a distance from said exposed surface such that the thickness of the wall section centrally of said boss substantially equals the predetermined wall thickness; said boss further having a screw-receiving passageway formed therein independent of said cavity; and a screw positioned in said passageway securing said first and second structural members together.

4,260,279

END SEAL FOR EXPANSION JOINT SEALING ASSEMBLY

Richard D. Hein, Wabash, Ind., assignor to The General Tire & Rubber Company, Ohio

Filed Mar. 9, 1979, Ser. No. 18,960
Int. Cl.[3] E01C *11/02*
U.S. Cl. 404—74 **8 Claims**



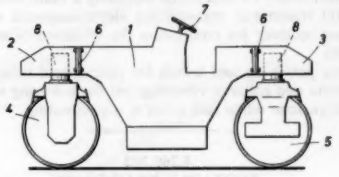
8. A method of installing an elastomeric sealing assembly including the steps of laying two elastomeric sealing pads end to end along the length of an expansion gap between two structure sections, securing said sealing pads in place on said structure sections with the end surfaces of said pads abutting each other, characterized in that after said sealing pads are so secured in place, there are the additional steps performed of inserting the nozzle of a sealant container into an inlet port in the top edge of at least one of the abutting end portions of said pad end surfaces, discharging a sealant from said container into a groove in said end surface that communicates with said inlet port until said sealant emerges from a vent portion of said groove that has an opening in said top edge of said end surface that is spaced from said inlet port, then covering said vent portion opening while continuing to discharge sealant into said groove, and then withdrawing said nozzle of said sealant container from said inlet port.

4,260,280

ROAD ROLLER

Ferdinand Hirn, Aigen/Ennstal, and Manfred Edlinger, Steinach, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Feb. 26, 1979, Ser. No. 14,906
Claims priority, application Austria, Mar. 3, 1978, 1518/78
Int. Cl.[3] E01C *19/26*
U.S. Cl. 404—122 **3 Claims**



1. A modular road roller comprising

(a) a central frame part unit having a front end and a rear end, each end having a connecting flange and the central frame part unit having no wheels,

(b) a main drive means including a hydraulic pump carried by the central frame part unit,

(c) steering control means carried by the central frame part unit,

(d) a first replaceable roller unit including a frame part having a connecting flange detachably mounted on the connecting flange of the central frame part unit at the front end thereof and comprising a front roller,

(e) a second replaceable roller unit including a frame part having a connecting flange detachably mounted on the connecting flange of the central frame part unit at the rear end thereof and comprising a rear roller,

(f) a hydraulic motor incorporated in at least one of the roller units, the hydraulic motor being connected to the hydraulic pump to be powered thereby for driving the roller of the one unit, and

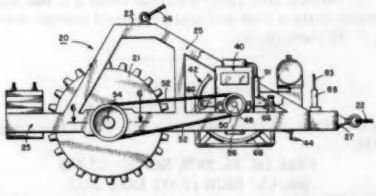
(g) a hydraulic steering means incorporated in at least one of the roller units, the steering means being operatively connected to the steering control means for steering the roller of the one unit.

4,260,281

METHOD AND APPARATUS FOR STABILIZING A FILL SLOPE

Claud B. Sargent, Biloxi, Miss., assignor to Michael P. Breston, Houston, Tex., a part interest

Filed Nov. 8, 1976, Ser. No. 739,901
Int. Cl.[3] E01C *19/26*
U.S. Cl. 404—127 **5 Claims**



2. A compaction system for stabilizing an earth fill slope, said slope being at least two-to-one, said system comprising:

a compaction roller,

means coupled to said compaction roller for selectively vibrating said roller, said means comprising a frame rotatably supporting said roller, an engine mounted on said

frame; and means for adjusting the tilt of the engine relative to said frame;

a self-propelled vehicle adapted to move on top of said slope,

a crane mounted on said vehicle, said crane having a boom cable connected to said roller and being adapted to lift said roller from said slope for moving said roller transversely of said slope,

a winch having a winch cable operatively-mounted on said vehicle,

means coupling said winch cable to said roller,

a radio transmitter on said vehicle,

control means on said frame including a radio receiver, and said transmitter transmitting electromagnetic signals to said receiver for controlling the vibration of said roller; and

means powering said winch for pulling said roller upslope while said roller is vibrating and for lowering said roller downslope while said roller is non-vibrating.

4,260,282

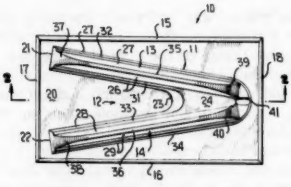
PORTABLE BOAT RAMP

Charles L. Dorsey, 600 W. Formosa St.; Donald L. Dorsey, 431 W. Granite St., both of Siloam Springs, Ark. 72761, and Sam M. Richardson, III, P.O. Box 1582 Industrial Rd., Eldorado, Ark. 71730

Filed Jan. 16, 1979, Ser. No. 3,918

Int. Cl.³ B63C *3/00*

U.S. Cl. 405—1 **12 Claims**



1. A portable boat ramp comprising means for protecting the bow and bottom of a boat, said protecting means including a lowermost generally horizontally disposed bottom wall and a pair of upstanding walls disposed in generally converging relationship to each other upon and between which is adapted to be disposed the bow of a boat whereby the latter is protected when said protecting means is resting upon a supporting surface such as a shore, the bed of a body of water, or the like, said upstanding walls each being hollow and each including inner and outer upstanding walls, said inner and outer upstanding walls having uppermost edges merging with a top wall, a lowermost edge of each of said outer upstanding walls lying generally in the plane of said bottom wall, said inner and outer upstanding walls being in generally converging relationship in a direction toward said top wall, a peripheral bottom wall merging with each of said outer upstanding wall lowermost edges thereby effecting a stable base for a boat adapted to rest upon the portable boat ramp when the latter is in use, and said lowermost bottom wall and said peripheral bottom wall both being in the same plane.

4,260,283

DE-WATERING SYSTEM

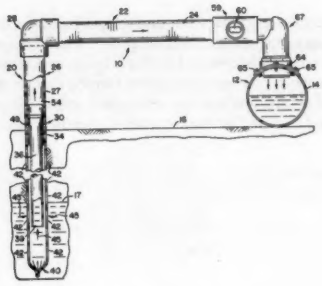
Richard L. Croy, 1621 Clearwater Largo Rd., Clearwater, Fla. 33516

Filed Jul. 16, 1979, Ser. No. 57,646

Int. Cl.³ E02B *11/00*; E03B *3/18*

U.S. Cl. 405—36 **7 Claims**

1. A de-watering system of the type used to extract water from a below ground surface water table, said system comprising: header means disposed above ground, a plurality of well point assemblies interconnected to said header means at spaced apart locations from one another along a length of said header means in fluid communication therewith; at least one of said well point assemblies comprising base means interconnected to said header means, strainer pipe means extending from said base means downwardly into the ground to the water table, down pipe means concentrically disposed on the interior of said strainer pipe means and extending downwardly therein along a major portion of the length of said strainer pipe means, intake means defined by an open distal end of the down pipe means, said intake means disposed in spaced relation above the distal end of said strainer pipe means, said strainer pipe means comprising inlet means extending along the lengeth thereof and including the predetermined dimension efficient to prevent entrance of soil particles to said intake means, said base means comprises a riser pipe disposed in interconnecting relation with both said said down pipe means and said strainer pipe means on one end thereof and said header means on the opposite end



thereof, a coupling means disposed in connected relation at one end thereof to said riser pipe and at the other end thereof to both said strainer pipe means and said down pipe means, said strainer pipe means and said down pipe means beng concentrically disposed relative to one another, said coupling means comprises a slip coupling element comprising one end portion mounted on the interior of said riser pipe and the opposite end portion concurrently secured to the exterior of said down pipe means and the interior of said strainer pipe means and thereby establish fluid communication between said riser pipe and said down pipe means, whereby liquid is transferred under negative pressure from the water table to said header means, said coupling means further including an enlarged annular mid-portion formed between said end portions disposed to position the outer surface thereof in substantially flush relation to the outer surfaces of said riser pipe and said strainer pipe means.

4,260,284

FILTER TUBE FOR DRAIN PURPOSES

Robert Huart, Soest, Netherlands, assignor to DHV Raadgevend Ingenieursbureau BV, Netherlands

Filed May 31, 1979, Ser. No. 44,019

Claims priority, application Netherlands, Jun. 7, 1978, 7806180

Int. Cl.³ E02B *13/00, 11/00*

U.S. Cl. 405—43 **10 Claims**

1. A filter tube for drain purposes, comprising:

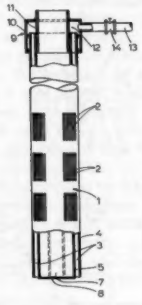
a tube;

openings debouching at the exterior surface of the tube;

a central discharge channel in the interior of the tube, said openings capable of being connected to a subatmospheric source through said central discharge channel;

at least one flush-channel formed in the wall of the tube and extending at least substantially in the longitudinal direction of the tube, said flush-channel being fully separated from the discharge channel and being able to be connected to a source of pressure fluid at or adjacent one tube end, said discharge channel, openings, and flush-channel arranged to allow simultaneous flushing via said flush-chan-

nel and draining through said openings into said central discharge channel; and



an outlet for said pressure fluid formed at the other end of the tube.

4,260,285

OIL BOOM

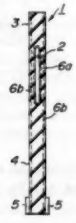
Mamoru Kurihara; Kiyoshi Ezaki, and Haruo Takahashi, all of Yokohama, Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed Aug. 22, 1978, Ser. No. 935,418

Claims priority, application Japan, Aug. 25, 1977, 52/112874[U]

Int. Cl.³ E02B *15/04*

U.S. Cl. 405—68 **4 Claims**



1. An oil boom manufactured by integrally molding a float hose portion, a fin portion disposed on the upper part of said hose portion, and a skirt portion disposed on the lower part of said hose portion; said hose portion, said fin portion, and said skirt portion being reinforced with bias cut weave fabrics embedded therein; the lower end of said skirt portion having dead weights attached thereto at predetermined intervals; characterized in that said bias cut weave fabrics are located (i) circumferentially around said hose portion and (ii) disposed longitudinally over said hose portion, said fin portion and said skirt portion substantially from the upper edge of said fin portion to the lower edge of said skirt portion so as to position said hose portion and said bias cut weave fabrics located circumferentially around said hose portion between said longitudinally disposed bias cut weave fabrics; each said biased cut weave fabrics arranged substantially at an angle smaller than 54° 44′ with respect to the longitudinal direction of said oil boom.

4,260,286

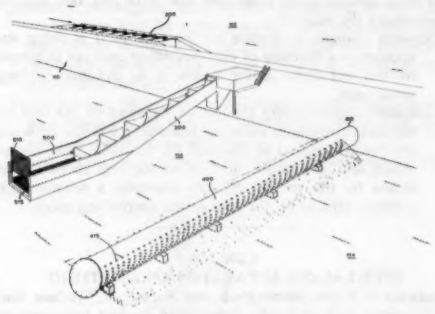
INTEGRATED FISH MIGRATION SYSTEM

Robert R. Buchanan, 340 Rosewood Ave., San Jose, Calif. 95117

Filed Apr. 19, 1979, Ser. No. 31,625

Int. Cl.³ E02B *8/08*

U.S. Cl. 405—82 **12 Claims**



1. Apparatus for providing a pathway for migrating fish between a lower body of water and an upper body of water, said apparatus comprising a plurality of compartment means having rounded bottoms for holding a preselected volume of water, said plurality of compartment means being coupled one to another in a ladder-like arrangement from a last compartment means at a lowest level to a first compartment means at a highest level, said plurality of compartment means comprising overflow means for allowing water in said compartment means to overflow therethrough whenever the water therein reaches a predetermined level, each of said plurality of compartment means between said first and last compartment means being coupled to receive water through the overflow means from the compartment means preceding it and to provide water through said overflow means to the compartment means succeeding it; and an inlet means being coupled to at least one of said plurality of compartment means for providing a preselected flow of water into at least one of said plurality of compartment means, thereby providing a preselected amount of water flow within said compartment means and also providing a preselected amount of turbulence for cleaning debris from said compartment means.

4,260,287

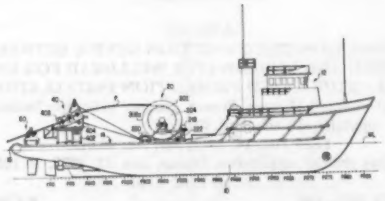
PORTABLE REEL PIPELAYING METHOD

Stanley T. Uyeda, and John Cha, both of Orange, Calif., assignors to Santa Fe International Corporation, Alhambra, Calif.

Filed May 24, 1978, Ser. No. 909,260

Int. Cl.³ B63B *35/04*; F16L *1/00*

U.S. Cl. 405—168 **4 Claims**



1. A method for laying a continuous length of pipe on the sea bottom from a carrier vessel, in which a pipe carrying reel is rotatably mounted on a carrier vessel, reel drive motor means are coupled to the reel for driving the reel to spool up pipe in a spooling mode and for providing a dynamic braking force to

the reel in an unspooling mode as pipe is unspooled from the reel, pipe straightener means are mounted to the carrier vessel downstream of the reel in the direction of unspooling for movement in a direction substantially parallel to the rotational axis of the reel, and pipe guide means are mounted to the carrier vessel downstream of the straightener means in the direction of pipe unspooling for movement in a direction substantially parallel to the rotational axis of the reel, said method comprising the steps of:

sensing changes in tension on the pipe as it is being unspooled as a function of corresponding changes in torque on the reel drive motor means in its dynamic braking mode; and

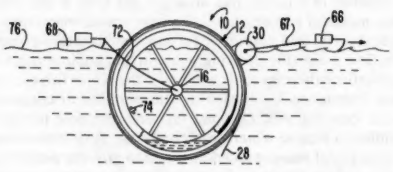
automatically adjusting the torque imparted to the reel by the reel drive motor means to maintain a balance between the torque applied to the reel by the reel drive motor means and the torque applied to the reel drive motor means by the reel to thereby maintain a substantially constant tension on the pipe in the unspooling mode.

4,260,288

PIPE LAYING APPARATUS AND METHOD

Frederick S. Ellers, Menlo Park, and Norman R. Wallace, San Francisco, both of Calif., assignors to Bechtel International Corporation, San Francisco, Calif.

Filed Nov. 27, 1978, Ser. No. 963,669
Int. Cl.³ F16L *1/04*
U.S. Cl. 405—168 **26 Claims**



7. A method of carrying and laying pipe under a body of water comprising: providing a generally annular, buoyant body; wrapping a single length of pipe in horizontal convolutions about the buoyant body at a first site; moving the pipe convolutions across a body of water to a second site as the convolutions remain substantially horizontal; admitting water into a part of said buoyant body at the second site to apply an unbalanced force on the convolutions when the convolutions are horizontally disposed so that the convolutions will become generally vertically disposed in said body of water; and rotating the vertically disposed convolutions about a generally horizontal axis while simultaneously advancing the convolutions along a generally horizontal path through the water to unwrap the convolutions from said buoyant body and to allow the pipe to gravitate toward and to be laid on the bottom of the body of water.

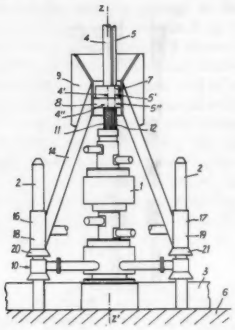
4,260,289

CONNECTION-DISCONNECTION DEVICE BETWEEN TUBING AND UNDERWATER WELLHEAD FOR USE WITH ARTICULATED PRODUCTION INSTALLATIONS

Michel Moinard, Bizanos, France, assignor to Societe Nationale Elf Aquitaine (Production), France

Filed Jun. 14, 1979, Ser. No. 48,617
Claims priority, application France, Jun. 21, 1978, 78 18533
Int. Cl.³ E21B *7/12*; F16L *1/04*
U.S. Cl. 405—169 **8 Claims**

1. A new seabed device to support the tubing from a wellhead, comprising a flange, containing the same number of passages as the tubing contains, and attached to the lower end of this tubing, this flange fitting into a rigid frame attached to and detachable from a framework located on the seabed, the said flange being connected to the wellhead by the same number of flexible pipes as there are passages, these flexible pipes being attached at one end to the passages in the flange and at



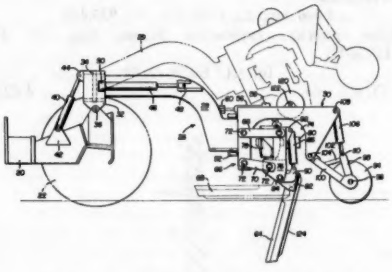
the other end to the corresponding passages in the wellhead, by means of a connection-disconnection device.

4,260,290

CABLE PLOW ASSEMBLY

James S. Flippin, Clearwater, Kans., assignor to J. I. Case Company, Racine, Wis.

Continuation-in-part of Ser. No. 800,592, May 25, 1977, Pat. No. 4,140,425. This application Feb. 7, 1979, Ser. No. 9,991
Int. Cl.³ F16L *1/02*
U.S. Cl. 405—181 **2 Claims**



1. A plow assembly for laying an elongated flexible element such as a cable in the slot cut by the plow in the ground, comprising:

a prime mover,

a box-shaped yoke having top, bottom and generally vertical side walls pivotally supported on a horizontal pivot axis transverse to the longitudinal axis of the prime mover, and an upwardly inclined extensible piston-cylinder interconnected between said prime mover and said box-shaped yoke,

a trailing generally horizontal boom assembly having a forward portion pivotally supported on a vertical pivot supported by said top and bottom walls of said box-shaped yoke,

a plow frame assembly supported by and beneath said boom assembly having a ground penetrating blade,

said boom assembly including a generally horizontal boom pivotally supported on said vertical pivot on said box-shaped yoke and a trailer supported on the rear of said boom on a vertical pivot, said trailer having two laterally spaced rearwardly extending arms, each arm having a supporting wheel mounted on a transverse horizontal axis,

said trailer having a downwardly extending opening gener-

ally U-shaped in side elevation and said plow frame being supported within said U-shaped opening, and

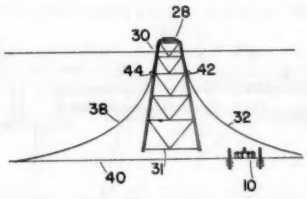
each of said wheels being supported on the rear of an arm by a strut pivotally connected at opposed ends to said arm and said wheel and a piston-cylinder interconnected above each said strut to said wheel and said arm, each of said wheels being mounted on a horizontal axle generally perpendicular to the longitudinal axis of said boom, the support for each said wheel including a downwardly opening U-shaped yoke rotatably receiving said wheel axle therein, and each of said piston-cylinders interconnected between the bite of said U-shaped yoke and a respective arm above said yoke, and each piston-cylinder being individually controlled to adjust the tilt angle of said trailer to correspond to said prime mover and accommodate uneven terrain such that as said rear trailer encounters uneven terrain, one piston-cylinder being extended and the opposed piston-cylinder being retracted for controlling the tilt of the boom and the plow blade to accommodate the uneven terrain.

4,260,291

INSTALLATION OF AN OFFSHORE STRUCTURE

Charles E. Young, Metairie, and Stephen A. Will, Slidell, both of La., assignors to J. Ray McDermott & Co., Inc., New Orleans, La.

Filed Feb. 27, 1979, Ser. No. 15,730
Int. Cl.³ E02B *17/02;* E02D *21/00*
U.S. Cl. 405—205 **11 Claims**



1. A method of installing a deepwater offshore structure comprising a jacket structure over an underwater fixture located on the sea floor in deepwater, comprising the steps of:

placing alignment means at predetermined locations around the underwater fixture, the alignment means being disposed substantially below sea level;

disposing the jacket structure in a vertical orientation off the sea floor;

maneuvering the jacket structure in horizontal movement toward the alignment means; and

positioning the jacket structure over the underwater fixture using the alignment means to align the jacket structure with the fixture.

4,260,292

ARCTIC OFFSHORE PLATFORM

Riddle E. Steddum; Theodore H. Nezames; Terrence M. Smith, and Bruce L. Crager, all of Houston, Tex., assignors to The Offshore Company, Houston, Tex.

Filed Oct. 25, 1979, Ser. No. 88,323
Int. Cl.³ E02D *21/00*
U.S. Cl. 405—217 **14 Claims**

1. An offshore platform operable for use along near shore arctic locations where prolonged ice conditions may be encountered, said platform comprising:

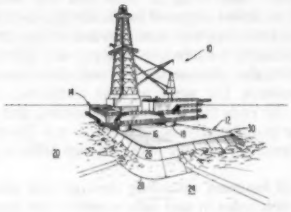
a lower barge hull operable to rest directly upon and be supported by the seabed at a near shore arctic location, said barge hull having an exterior configuration in the general shape of a rectangular frustum with upwardly and inwardly sloping lateral side walls extending from the seabed to a position above a water and/or ice surface of the contiguous sea, said barge hull having a central longitudinal axis extending end-to-end thereof and a central transverse axis extending side-to-side thereof;

means for heating at least said lateral side walls of said barge hull for facilitating movement of sea ice up the inclined barge side walls to fail the sea ice in bending as the ice advances towards said barge hull;

generally rectangular deck means positioned above said lower barge hull for supporting offshore operations, said deck means having a central longitudinal axis extending end-to-end thereof and a central transverse axis extending side-to-side thereof;

means for supporting said deck means in an elevated posture with respect to an upper surface of said barge hull, said means for supporting comprising,

first column means extending between the upper surface



of said barge hull and a lower surface of said deck means for maintaining the lower surface of said deck above the upper surface of said hull and out of contact with sea ice passing over said barge hull, and

second column means extending between an upper surface of said barge hull and a lower surface of said deck means for maintaining the lower surface of said deck above the upper surface of said barge hull and out of contact with sea ice passing over said barge hull; wherein

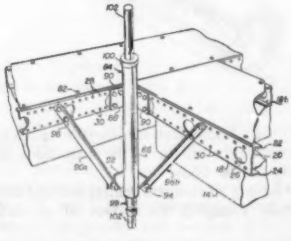
said deck means being positioned above said barge hull in a position such that the longitudinal axis of said deck means extends at right angles to the longitudinal axis of said barge hull and at least one end of said deck means extends beyond an imaginary vertical plane projecting upwardly from at least one longitudinal edge of the upper surface of said barge hull.

4,260,293

FLOATING DOCK STRUCTURE AND METHOD FOR FABRICATING THE SAME

John A. Peterson, 853 Apricot, Campbell, Calif. 95008

Filed Apr. 15, 1980, Ser. No. 140,495
Int. Cl.³ E02B *3/20*
U.S. Cl. 405—219 **12 Claims**



1. In a dock structure:

a walkway to be supported above the surface of a body of

water, said walking including a plurality of rigid structural members each having a generally C-shaped cross sectional shape formed by a web having two parallel edges and flanges extending from respective said edges in perpendicular integral relation to said web, said web having first and second rows of web holes therein, said rows being disposed on opposite sides of the center line of said web in symmetry of the center line, the web holes in each said row being disposed at uniform intervals and the web holes in said first row being transversely aligned with web holes in said second row, said flanges each having a row of flange holes therein, said flange rows being uniformly spaced from said web edges, the flange holes being uniformly spaced apart along said rows and the flange holes in one said row being transversely aligned with the flange holes in the other said row, said structural members being assembled in a rectangular configuration to form a rectangular frame, there being at least first and second said structural members disposed in parallel spaced apart relation and constituting side members and at least two structural said members extending between said side members in perpendicular relation thereto and constituting transverse members, the webs of said transverse members having at the ends thereof integral fastening plates which extend perpendicularly of said webs and having plate holes disposed for registry with said web holes in said side member,

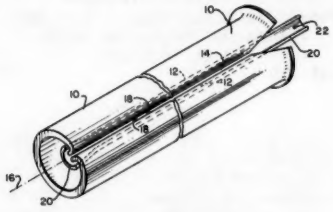
a plurality of fasteners extending through said plate holes and said web holes in said side members for joining said side members and said transverse members in rectangular configuration, a gusset plate for reinforcing the intersection of said transverse member with said side member, said gusset plate having first and second mutually perpendicular rows of gusset holes that are spaced at intervals for registry with said flange holes in adjacent said structural members, a plurality of gusset fasteners extending through said gusset holes and said flange holes for joining said gussets to said flanges, and a rigid sheet secured to said rectangular frame remote from said gussets to form a walkway surface.

4,260,294

FRICTION ROCK STABILIZER AND METHOD FOR INSERTING THEREOF IN AN EARTH STRUCTURE BORE

James F. Cantrel, Easton, Pa., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Nov. 19, 1979, Ser. No. 95,375
Int. Cl.[3] E21D *21/00, 20/00*
U.S. Cl. 405—259 **4 Claims**



1. A friction rock stabilizer, for insertion in a bore formed in an earth structure for stabilizing the structure comprising:

a generally tubular body;

said body having an elongate central axis and wall means for frictionally engaging the surface of an earth structure bore;

said body further having a first, free, relaxed, transverse dimension predetermined to be larger than the transverse dimension of a bore into which it is to be inserted, and an axial length which is considerably greater than said transverse dimension; and

said body also having an axially-extended slit formed through said wall means thereof to permit said body to assume a second, constrained, transverse dimension which is smaller than both said first transverse dimension and the transverse dimension of a bore into which it is to be inserted; wherein

said wall means has confronting axially-extended and spaced-apart surfaces which: (1) define said slit therebetween, and (2) have key means formed adjacent to said slit-defining surfaces for: (a) receiving contraction forces thereat, and (b) responsive to such forces, for moving said slit-defining surfaces toward each other; wherein

said key means comprises axially extended, substantially parallel ribs;

said ribs project substantially radially, relative to said elongate axis, and extend axially along substantially the full length of said body; and

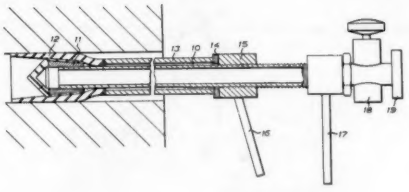
at least one of said ribs projects inwardly, from said wall means, toward said axis of said body.

4,260,295

INJECTOR

Elof Vestlund, Pixbo, Sweden, assignor to Trelleborg AB, Trelleborg, Sweden

Filed Jun. 1, 1979, Ser. No. 44,734
Int. Cl.[3] E02D *3/12*
U.S. Cl. 405—269 **6 Claims**



1. An injector for injecting material through bores or other holes in rock or other solid material, comprising,

a tubular shell;

an injector pipe extending through the tubular shell;

a unit coupled to the injector pipe and comprising an injector nozzle and an expansion device;

said injector nozzle including a non-return valve means;

said expansion device including a sleeve which is expandable into sealing engagement with the wall of a bore or hole in response to axial forces exerted on the sleeve by the tubular shell; and

means on said unit for maintaining said sleeve in its expanded state after the axial forces exerted thereon by said tubular shell have been released;

said unit being releasable from said injector pipe and said tubular shell, whereby the sleeve is maintained in its expanded state to retain the unit in the bore or hole.

4,260,296

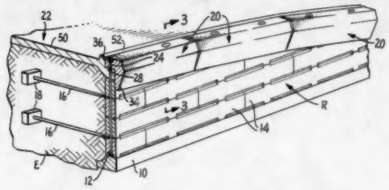
ADJUSTABLE CAP FOR RETAINING WALLS

William K. Hilfiker, Eureka, Calif., assignor to The Reinforced Earth Company, Washington, D.C.

Filed Jun. 8, 1979, Ser. No. 46,866
Int. Cl.[3] E02D *29/02*
U.S. Cl. 405—284 **9 Claims**

1. In combination with a retaining wall comprised of precast concrete stretchers assembled into stacked superimposed relationship, the improvement comprising: screw threaded rods secured to and extendng upwardly from the uppermost stretchers of the wall; adjusting nuts threadably received on

said rods for select threadable movement thereon up and down relative to said stretchers; performed elongated cap elements extending lengthwise over said uppermost stretchers; said elements having openings therein for receipt of said rods; support surface means on said elements engageable with said adjusting nuts to support said cap elements on said nuts in spaced relationship to said uppermost stretchers for select elevational adjustment relative thereto; and skirts formed on



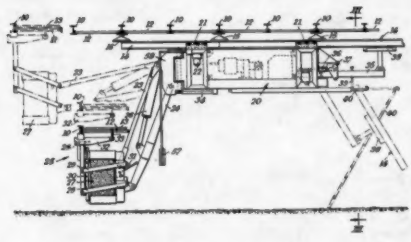
the cap elements for extension over the outside surfaces of the stretchers disposed beneath said cap elements, said skirts being of a depth sufficient to cover the space between the cap elements and the uppermost stretchers, irrespective of elevational adjustment of said cap elements relative to said stretchers, whereby said skirts may function as a form surface to capture cementitious material poured between the cap elements and the uppermost stretchers.

4,260,297

MACHINES FOR POSITIONING ROOF SUPPORTS IN A TUNNEL

John Houston, Prestbury, and Victor P. Rigby, Bolton, both of England, assignors to Edbro Limited, Lancashire, England

Filed Sep. 26, 1978, Ser. No. 945,899
Int. Cl.³ E21D *15/58, 7/00*
U.S. Cl. 405—303 **18 Claims**



1. A machine for positioning roof supports in a tunnel and comprising:

a body unit including a track engaging assembly by which the body unit can be suspended from an overhead track extending along the tunnel;

a drive motor for driving the body unit along the track;

an arm assembly support member mounted on the body unit for pivotal movement about a vertical axis under the control of a slewing actuator;

an arm assembly pivotally connected at one end to the arm assembly support member for pivotal movement about a horizontal axis under the control of a lifting actuator;

a yoke holder so mounted at the opposite end of the arm assembly as to maintain a constant attitude during the raising and lowering of the arm assembly between a lowered position and a raised position of the arm assembly; and

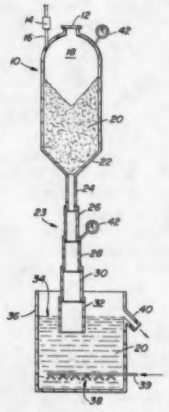
a yoke for supporting a roof support and pivotally mounted on the yoke holder for pivotal movement about a vertical axis under the control of a pivoting actuator and control means to control actuation of the pivoting actuator and the slewing actuator so that movement of the arm assembly from a slewed position in which the arm assembly is in the lowered position and transverse to the length of the tunnel and the yoke is parallel to the length of the tunnel and adjacent a wall of the tunnel to a lifting position in which the arm assembly is in the lowered position and lies along the length of the tunnel with the yoke normal to the length of the tunnel includes a movement from the slewed position to an intermediate position during which the slewing actuator and the pivoting actuator are operated together to pivot the arm assembly while pivoting the yoke to maintain the yoke parallel to the length of the tunnel and a movement from the intermediate position to the lifting position in which the slewing actuator and the pivoting actuator are operated together to pivot the arm assembly to the lifting position while pivoting the yoke in a return movement to a position in which the yoke is normal to the length of the arm assembly whereby a roof support placed on the yoke in said slewed position is kept clear of the tunnel walls during movement from the slewed position of the arm assembly to the lifting position.

4,260,298

CONTROL OF SOLIDS DISCHARGE FROM PRESSURIZED VESSEL

Frederick A. Zenz, Garrison, N.Y., assignor to The Ducon Company, Inc., Mineola, N.Y.

Filed May 17, 1979, Ser. No. 40,004
Int. Cl.³ B65G *53/40*
U.S. Cl. 406—146 **6 Claims**

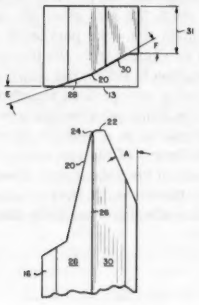


1. Apparatus comprising a pressurized vessel adapted to contain solids under pressure, the lower end portion of said vessel being tapered toward a valveless discharge conduit, said discharge conduit communicating at its upper end with said vessel and extending downwardly from said vessel, said conduit having a cross-sectional flow area which increases in a direction away from said vessel so that solids and any interstitial gas in the conduit are progressively depressurized while solids are subject to gravity and pressure from within said vessel, and means associated with the lower end of said conduit for controlling the rate of discharge of solids from the lower end of said conduit.

4,260,299
CUTTING TOOLS HAVING COMPOUND CUTTING FACES

Arthur B. Ryan, Canandaigua, and Gilmore M. Spear, Rochester, both of N.Y., assignors to The Gleason Works, Rochester, N.Y.

Filed May 25, 1979, Ser. No. 42,391
Int. Cl.[3] B23P *15/34*
U.S. Cl. 407—115 **9 Claims**



1. In a cutting tool of the type which includes a cutting end having a cutting edge defined by the intersection of a cutting face with one side face and an end of the tool and in which the cutting end of the tool includes a profile which allows said cutting edge to engage and cut portions of both a side and a bottom of a slot being formed in a workpiece, the improvement comprising

angular planar surfaces formed on said cutting face between a first part of the cutting face defining the portion of the cutting edge which serves to cut the side of the slot in a workpiece and a second part of the cutting face defining the portion of the cutting edge which serves to cut the bottom of the slot in the workpiece.

9. In a gear cutting tool of the type which includes a cutting face formed at a desired side rake angle for all or a part of the length of said tool and which includes a cutting end having a profile formed thereon for defining a cutting edge between said cutting face and one side and the end of the tool, the improvement comprising

a first part of said cutting edge serving to cut at least a portion of a side of a tooth slot of a gear,

a second part of said cutting edge serving to cut at least a portion of a bottom of a tooth slot of a gear, and

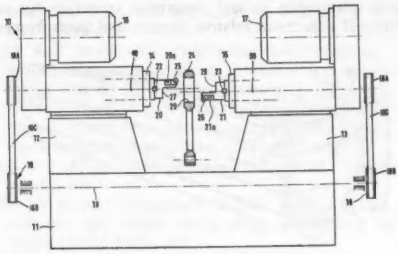
a chip control surface formed between said first and second parts of the cutting edge, said chip control surface comprising angularly displaced adjacent planar surfaces on the cutting face of the tool.

4,260,300
METHODS AND APPARATUS FOR FORMING HOLES IN WORKPIECES

Dankwardt Pickhardt, Fürth, Fed. Rep. of Germany, assignor to Sandvik Aktiebolag, Sandviken, Sweden

Filed Apr. 24, 1979, Ser. No. 32,740
Claims priority, application Fed. Rep. of Germany, May 3, 1978, 2819504
Int. Cl.[3] B23B *35/00, 39/22*
U.S. Cl. 408—1 R **3 Claims**

1. In a method of forming a hole in a workpiece by providing two mutually facing boring bars each having an axial recess and carrying an eccentric cutting insert, said inserts being of equal eccentricity, advancing said boring bars toward one another from opposite sides of the workpiece to bring said inserts into cutting engagement with said workpiece while rotating the boring bars at a mutually synchronized speed to maintain the insert of each boring bar aligned with the axial recess of the other boring bar, and continuing to advance and rotate said boring bars such that each insert enters said recess of the other boring bar and the inserts axially pass each other, the improvement comprising the step of:

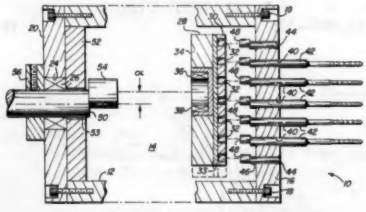


forming said hole of preselected oval shape by rotating said boring bars about mutually spaced parallel axes of rotation that are spaced the same preselected distance from the axis of the oval hole being formed.

4,260,301
MULTIPLE SPINDLE DRILLING APPARATUS

Leroy A. Reiman, 1725 Scraton St. South, St. Petersburg, Fla. 33771

Filed Jul. 30, 1979, Ser. No. 61,838
Int. Cl.[3] B23B *39/16*
U.S. Cl. 408—47 **12 Claims**



1. Machining apparatus comprising:

a housing having an internal cavity;

a face plate mounted on one end of said housing, said face plate having plural holes extending therethrough;

plural drill bits, each bit extending through one of said holes in said face plate and each bit including a crank at an extremity thereof extending into said housing;

a driver plate in said cavity, said driver plate having plural holes extending therein from one side of said driver plate with the crank of at least one of said bits extending into each hole of said driver plate;

said driver plate further including a driver hole extending therein from a side of said driver plate opposing said one side;

a drive shaft extending into said cavity and having a crank at the extremity thereof engaging said driver plate in said drive hole for eccentric rotation of said driver plate;

support means for said drive shaft at the end of said housing opposing said one end;

bearing means between said crank of said drive shaft and said driver plate; and wherein

said driver plate comprises:

first and second layers of relatively soft material, said plural holes extending through said first layer and said drive hole extending into said second layer; and

a relatively hard wear plate between said first and second

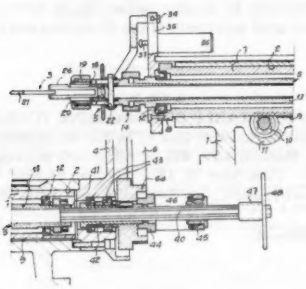
layers and in contact with the extremity of said crank of each said drill bit.

4,260,302

TRANSFER MACHINES

Jorge G. Benages, Calle Balmes, 221, Barcelona 6, Spain

Filed Aug. 13, 1979, Ser. No. 66,168
Claims priority, application Spain, Aug. 21, 1978, 472,707
Int. Cl.³ B23B *39/16*
U.S. Cl. 408—118 **10 Claims**



1. A machine tool for successively performing a plurality of machining operations on a workpiece, said machine tool comprising:

a fixed machine head;

a spindle carrier sleeve slidably mounted in said head for movement in an axial direction, said sleeve having first and second opposite ends, said first end projecting from said head;

a spindle rotatably mounted within said sleeve, said spindle being constrained against axial movement relative to the sleeve;

a toolholder fitted to said spindle so as to be fast therewith, said toolholder carrying first and second tool means outwardly of said first end of said sleeve, for said tool means each to rotate with said spindle and at least said first tool means to be axially moveable relative to the machine head by axial movement of said spindle carrier sleeve and hence of said spindle, said first and second tool means being displaceable relative to one another in said axial direction;

first displacement means for effecting axial movement of said sleeve relative to said head and thereby axially feeding said first tool means;

second displacement means for at least initiating relative displacement of said first and second tool means, said second displacement means being mounted on said projecting first end of said sleeve;

said head further carrying drive wheel means for transmitting drive to said spindle, said wheel means being rotatably mounted outwardly of said second end of said sleeve, rotationally coupled to said spindle to effect rotation thereof and constrained against axial movement relative to said head; and

means for rotatably driving said drive wheel means.

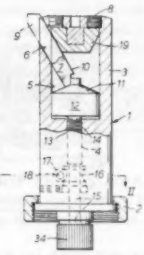
4,260,303

BORING TOOLS

John M. W. Newman, Wells House, Parsonage La., Farnham Common, Buckinghamshire, England

Filed May 11, 1979, Ser. No. 38,417
Int. Cl.³ B23B *51/00*
U.S. Cl. 408—168 **8 Claims**

1. A boring tool comprising: a body; a plurality of cutting blades having blade outer ends with cutting edges; said blades being supported by said body adjacent one end thereof with said cutting edges projecting outwardly beyond said body and being movable outwardly and inwardly relative to said body for varying the diameter of a hole bored by said blades; a generally cylindrical cavity in said one end of said body; a blade advancing member having an enlarged head positioned in said cavity; said blades having blade inner ends engaging said head; said body having an axial threaded bore extending inwardly from said cavity; said blade advancing member further having an elongated threaded shank including opposed ends with said shank threadedly engaging said threaded bore for moving said head longitudinally of said body upon rotation



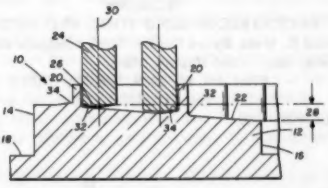
of said shank said head being positioned on one end there of; said blade advancing member having an elongated axial shaft portion of non-circular cross-sectional shape on the opposite end of said threaded shank from said head; a rotatable worm wheel received on said shaft portion for rotatably driving said shaft portion upon rotation of said worm wheel and while providing longitudinal sliding movement of said shaft portion relative to said worm wheel; and, a worm gear rotatably mounted in said body transversely of the longitudinal axis thereof and drivingly engaging said worm wheel.

4,260,304

METHOD FOR MACHINING AN IMPELLER COVER

Helmuth O. Jacobi, Olean, N.Y., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 10, 1979, Ser. No. 83,429
Int. Cl.³ B23C *3/32*
U.S. Cl. 409—132 **3 Claims**



1. In a method of machining a conical impeller cover, the steps of:

forming the cutting edge of a rotatable cutter to an angle relative to its rotational axis that is substantially equal to the tapered angle of said cover;

positioning said cutting edge adjacent to a blank impeller cover;

feeding said cutter into said blank impeller cover while rotating said cutter, said cutter being fed in a direction across said blank impeller substantially perpendicularly relative to the lowermost line of contact between said cutting edge and blank impeller cover; and,

repeating said feeding while skipping certain circumferentially-spaced areas to form vanes on said impeller cover

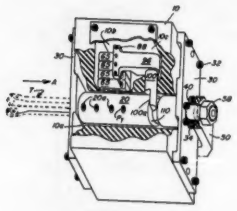
projecting in a direction substantially parallel to the rotational axis of said cutter.

4,260,305

DEVICE FOR PREVENTING TOOL BREAKAGE IN TOOL MACHINES

Robert T. Clopton, Rte. 1, Canmer, Ky. 42722

Filed Apr. 4, 1979, Ser. No. 26,993
Int. Cl.³ B23D *39/00*; B23B *25/06*; B23Q *11/04*
U.S. Cl. 409—134 **33 Claims**



1. A device for protecting tools against excessive cutting pressure and being of the kind which has a support means for a holder means carried by a yieldable means prestressable to yield to a selected cutting pressure for operating a control means;

the improvement wherein said yieldable means is a resilient mount means and wherein said holder means comprises a holder isolatedly and movably carried by said resilient mount means; and being restricted to linear movement thereby;

said resilient mount means being secured to said support means and to said holder wherein said resilient mount means is the sole support for said holder;

selective prestressing means intermediate said support means and said holder for prestressing said resilient mount means;

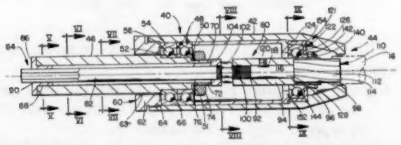
said resilient mount means being thereby selectively prestressable for yielding movement of said holder relative to said support means when cutting pressure exceeds a selected prestress in said resilient mount means for operating a control means.

4,260,306

ECCENTRIC BORING TOOL AND METHOD

Siegfried K. Weis, Byron Center, Mich., assignor to C. L. Frost & Son, Inc., Grand Rapids, Mich.

Filed Jul. 16, 1979, Ser. No. 57,587
Int. Cl.³ B23C *3/28*
U.S. Cl. 409—200 **15 Claims**



1. An eccentric cutting tool for machining an annular surface having an axis off center from the central axis of a workpiece, said tool adapted for use in an automatic screw machine and comprising:

an outer housing having an open forward end dimensioned to receive the workpiece;

a tool holder supported within said housing;

means engaging said housing for rotatably supporting said housing with respect to said tool holder;

means operatively connected to said housing for causing said housing to rotate with the workpiece;

means rotatable with said housing and supporting said tool holder for causing the longitudinal axis of said tool holder to be positioned eccentrically of the workpiece central axis, concentric with an axis of the annular surface to be machined and for causing the tool holder to orbit about the longitudinal axis of said outer housing without rotation of the tool holder about its longitudinal axis; and

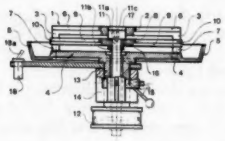
a cutting tool supported by and coaxially aligned with said tool holder whereby upon rotation of the outer housing the tool will orbit about the central axis of the workpiece and machine an annular surface in the workpiece upon relative axial movement of the workpiece and outer housing.

4,260,307

WORK TABLE FOR MACHINE TOOLS

Sven-Mikael Mickelsson, Box 5770, 821 00 Bollnas, and Sture R. Hall, Runemo 4231, 822 00 Alfta, both of Sweden

Filed May 29, 1979, Ser. No. 43,356
Claims priority, application Sweden, Jun. 6, 1978, 7806547
Int. Cl.³ B23Q *3/06*
U.S. Cl. 409—225 **4 Claims**



1. A work table for machine tools, such as pillar-type drills and the like, comprising:

(a) a substantially horizontal plate forming a work surface (2) having a plurality of grooves (6) cut through said plate and extending from an inner portion of said work surface to the outer edge thereof;

(b) a flange (3) depending from and surrounding the outer edge of said work surface and supported on a base plate (4);

(c) said flange having a plurality of substantially vertical openings (7) aligned with the grooves (6) in said horizontal plate;

(d) a clamping plate mounted to move vertically beneath said work surface within a space defined by said flange (3) and said base plate;

(e) said clamping plate being provided with a plurality of T-grooves (9) extending in aligned relationship with the grooves (6) in said horizontal plate;

(f) said clamping plate additionally having projections (10) guided in the openings (7) of said flange (3); and

(g) power transmitting means providing movement of said clamping plate into positions relatively inclined to said work surface.

4,260,308

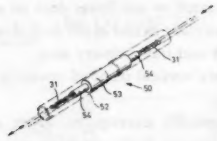
SEALING DEVICES

Robert A. Coulson, Harwell, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Nov. 26, 1979, Ser. No. 97,936
Claims priority, application United Kingdom, Nov. 30, 1978, 46751/78
Int. Cl.³ B25J *3/00*
U.S. Cl. 414—8 **4 Claims**

1. A master/slave manipulator comprising a master arm assembly, a slave arm assembly, a through-tube assembly adapted to connect together the master arm assembly and the slave arm assembly, and longitudinally movable, elongate

flexible members adapted to sustain a tensile load and arranged to transmit motion from the master arm assembly to the slave arm assembly through the through-tube assembly, wherein the improvement comprises, an assembly of sealing devices in the through-tube assembly, each sealing device comprising, an outer member having a duct therethrough, which duct extends



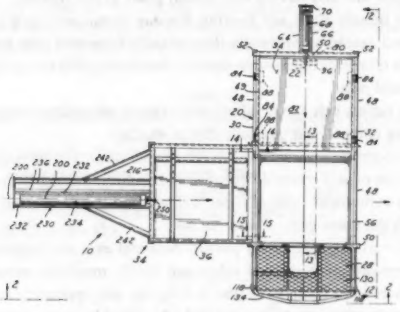
over a length not less than the maximum longitudinal movement of a respective said flexible member, and an inner sealing member adapted to be positioned intermediate the ends of the respective flexible member, said inner sealing member being located in the duct so as to slide and maintain a seal therein over the longitudinal movement of the respective flexible member.

4,260,309

PALLETIZER

William F. Lynn, Taylor, Mich., assignor to Precision Pneumatic Palletizer, Inc., Detroit, Mich.

Filed Aug. 20, 1979, Ser. No. 67,854
Int. Cl.³ B65G 57/24
U.S. Cl. 414—46 **11 Claims**



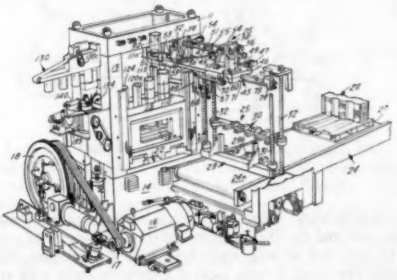
1. A palletizer for use in conjunction with a parcel feed mechanism comprising a main frame having an elongated axis, a first side and a second side paralleling said axis, said frame including at each of said sides alignment means for removably attaching a subframe, an elevated track structure carried by said frame, said structure including a pair of parallel and spaced apart tracks on opposite sides of said axis, a platen movably mounted on said tracks between an extended position and a retracted position, a first fluid operated motor carried by said frame and connected to said platen for moving same between said extended and retracted positions, said platen when in said extended position adapted to receive parcels from the parcel feed mechanism, a parcel receiving zone located under the extended position of said platen, elevator means for supporting a pallet relative to said parcel receiving zone for receiving successive layers of parcels as said platen is retracted by said first fluid motor, control means for vertically moving said elevator means between a lower position where it receives an empty pallet and from where a loaded pallet is discharged and a series of elevated positions where layers of parcels are received at said parcel receiving zone and deposited on a pallet or on the preceding layer of parcels, all supported by said elevator means, said control means stepping said elevator means vertically downwardly after a layer of parcels is deposited thereon until the loaded pallet reaches the lower position of said elevator means, a subframe removably connected to said alignment means at either the left hand side or the right hand side of said main frame, said subframe containing a pallet storage station located adjacent said elevator means for storing a plurality of vertically stacked empty pallets, said subframe having an axis perpendicular to the axis of said main frame, and a second fluid motor having an axis carried by said subframe, said second motor containing a ram which is adapted to engage the lower one of the empty pallets in the pallet storage station of said subframe and to move it against the loaded pallet at said lower station thereby displacing said loaded pallet from the elevator means and replacing same with an empty pallet, the axis of said second fluid motor being spaced from and parallel to the axis of said subframe.

4,260,310

STRIP FEED ELEVATOR

Edward W. Blake, Orinda, and Kurt L. Hahn, San Rafael, both of Calif., assignors to American Can Company, Greenwich, Conn.

Filed Jul. 11, 1979, Ser. No. 56,795
Int. Cl.³ B65H 3/08
U.S. Cl. 414—118 **7 Claims**



1. A feeding system for a stack of elongated metal strips to be supplied continuously in end-to-end seriatim fashion by spaced intermittent shifting comprising:

(a) a conveyer horizontally disposed to shuttle pallet loads of multiple stacks of strip longitudinally therealong and into position for lifting therefrom;

(b) an unloader fork having tines positioned to extend parallel and longitudinally relative to said coveyer for interengaging the pallet beneath the first of the stacks;

(c) lifting means associated with said unloader fork to elevate same relative to said conveyer to a predetermined height;

(d) a feed fork having tines movably mounted to go from a first position in the plane of said predetermined height and longitudinally spaced opposite said unloader fork to a second position beneath the stack with said tines interdigitated with said unloader fork tines and to a third position upwardly relative to said unloader fork;

(e) spring loaded opposed support fingers position to engage the longitudinal sides of the stack for movement relative thereto permitting the stack to move upwardly therebetween against the urging of the spring loading and for moving toward one another at a level for engaging the bottom surface of the lowest strip of the stack and for carrying and preventing the bottom portion of the stack from moving down;

(f) an automatic feed means to individually pick the uppermost single strip from the stack and raise same to a preset

horizontal plane from which each strip may be laterally translated into alignment for intermittent shifting;

(g) a track means substantially in said preset horizontal plane and equipped with longitudinally disposed guides to receive the individual strip therebetween; and

(h) ratchet means disposed between said guides for intermittent movement parallel thereto to shift each strip for feeding each strip in seriatim end-to-end relation a prescribed longitudinal distance in response to said movement.

4,260,311

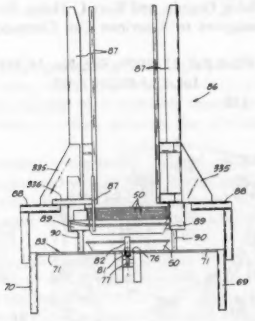
METHOD OF AND APPARATUS FOR HIGH SPEED PRODUCTION OF ABSORBENT PAD LINED RECTANGULAR SLOPING WALLED POLYSTYRENE FOAM MEAT PACKAGING TRAYS

Mark J. Hanses, Fresno, Calif., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jul. 30, 1979, Ser. No. 61,831

Int. Cl.[3] **B65H** *3/08*

U.S. Cl. 414—129 **4 Claims**



1. In an apparatus for use in denesting rectangular foam meat packing trays and the like wherein said trays are provided with a flat bottom and sloping walls and with at least two, flat, horizontal denesting flanges located externally flush with the wall edge of the tray at a pair of diagonally opposite corners of the tray, the combination of:

a pair of course pitched screws rotatably mounted on vertical axes spaced to extend adjacent peripheral local portions of the upwardly exposed threads of said screws underneath said diagonally opposed flanges of a tray symmetrically superposed over and resting upon both of said screws;

magazine forming guide means for guiding successive nested stacks of said trays downwardly with the lowermost tray in said magazine superimposed as aforesaid on said screws;

means for synchronously rotating said screws to progressively and rapidly denest the trays in said stacks and separately deliver said trays downwardly in a predetermined timed, spaced relationship;

a frame having a lower deck and an upper deck, said upper deck being slotted centrally throughout its length;

a chain conveyor mounted on said frame in the plane of said slot and with the upper flight of said conveyor close to said upper deck and having tray propelling lugs extending upwardly through said slot at uniformly spaced intervals, said lugs travelling through a tray receiving area at one end of said upper deck and thence to the opposite or discharge end of said upper deck,

said denesting screws and magazine being mounted on said frame to deliver denested individual trays downward onto said tray receiving area in timed relation with said chain conveyor, each tray being caught by the next conveyor lug rising through said deck slot and propelled along said upper deck, thereby making room in said area for receiving the next individual tray delivered into said area from said tray stack denester;

right angle rail means mounted on said frame and adjustably confining said trays being propelled by said lugs in centrally symmetrically aligned relation with said lugs; said means for rotatably mounting said screws including:

a base rigidly mounted on said lower deck on a vertical axis lying in the same plane as said upper deck slot and coinciding axially with said tray delivery area;

a hollow stationary vertical mandrel coaxially fixed to the top of said base;

a pair of telescopically overlapping lower external and upper internal sleeves freely rotatably mounted on and structurally reinforcing said mandrel;

means preventing endwise movement of said sleeves relative to each other or to said mandrel;

a flat circular gear box fixed coaxially on the upper end of said internal sleeve and substantially peripherally overlying said internal sleeve;

coplanar gear means in said gear box including a central drive gear and two diametrically opposed driven gears;

mitered gear drive means in said base including a female spline extending upwardly vertically into the hollow lower end of said mandrel and a horizontal shaft and sprocket for chain driving said apparatus;

a floating drive shaft extending downward into said hollow mandrel into splined relation with said female spline and having said central drive gear fixed to its upper end;

two driven gear driven shafts passing vertically through said gear box and having said driven gears keyed thereto;

two tubular shaft and bearing housing means mounted on and extending vertically downwardly from said gear box to terminate at the same level in two turnbuckle mounting axial pins;

two timing belt drive pulleys mounted on upwardly extending ends of said gear box driven shafts;

two co-planar horizontal tubular booms welded to opposite sides of said rotatable external mandrel-reinforcing sleeve;

two cylindrical vertical tubes welded near their lower ends to the outer ends of said booms;

two vertical yokes with parallel terminal ears overlapping opposite ends of said tubes and freely rotatably united therewith, each yoke also having an ear oppositely extending from its lower end and a bearing block oppositely extending from its upper end;

two vertically spaced pairs of bearing means in said bearing blocks and two pivot pins concentric with said pairs of bearing means and extending downward from said last recited ears at the same horizontal level with the aforerecited two turnbuckle mounting axial pins;

two screw mounting shafts vertically mounted in said pairs of bearing means and each extending downwardly therefrom to mount a belt driven timing pulley and upwardly therefrom to mount a tray denester screw;

endless drive belts entrained about said pairs of drive and driven timing pulleys; and

turnbuckles terminating in self-aligning bearings which fit over said pins and permit adjustment of the tension on said endless drive belts; and

means for adjusting the spacing of said tray denesting screws by controlled rotation of at least one of said rotatable sleeves, while fixing the other such sleeve against rotation.

4,260,312

APPARATUS FOR TRANSFERRING TOXIC AND RADIOACTIVE MATERIALS

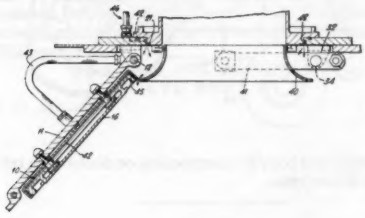
Stanley Hackney, Appleton, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Sep. 11, 1979, Ser. No. 74,478

Claims priority, application United Kingdom, Sep. 27, 1978, 38429/78

Int. Cl.³ G21F 7/00

U.S. Cl. 414—292 **5 Claims**



1. An apparatus for transferring toxic and radioactive materials into and out of an enclosure through a port in a wall of the enclosure comprising a container for the materials adapted to be releasably fitted about the port, a removable end cover for the container, a movable cover for the port releasably engageable with the end cover when the container is fitted to the enclosure to allow communication through the port between the enclosure and the container, and gas supply means for supplying gas at a pressure greater than the pressure within the enclosure to at least a gap between the interengaged covers to thereby prevent the ingress of toxic and radioactive material on to facing surfaces of the interengaged covers, which surfaces are exposed to the environment when the container and its cover are removed from the port.

4,260,313

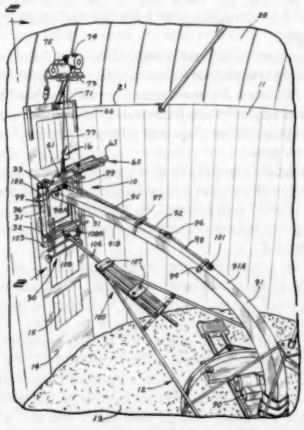
SILO DISCHARGE DOOR FRAME FOR USE WITH SILO CLEAN CHUTE FUNNEL

Frederick E. Van Dusen, Hopkins, Minn., assignor to Van Dusen & Co., Inc., Plymouth, Minn.

Filed Jan. 15, 1979, Ser. No. 3,709

Int. Cl.³ B65G 65/36; E04H 7/22

U.S. Cl. 414—313 **18 Claims**



1. A movable door frame for silage discharge door openings of a silo, said door frame being movable from door opening to door opening vertically in the silo and comprising a perimeter frame member including side frame members that extend generally uprightly along the upright side edges of a door opening in which the frame is to be used, and cross frame members, adjustable coupling means between said cross frame members and said upright members to permit adjustment of the lateral width of said side frame members, means for positioning the door frame within a door opening, releasable latch means to releasably hold the perimeter frame member in a fixed position in a door opening, said perimeter frame member including means to mount and position thereon components of mechanical silage discharge mechanisms to thereby direct silage being discharged to precise locations in relation to the door opening.

4,260,314

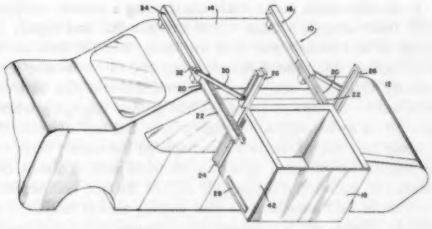
ROOF TOP CARRIER

Richard R. Golze, 637 Kingsley Trail, Bloomfield Hills, Mich. 48013

Filed Jul. 21, 1978, Ser. No. 926,940

Int. Cl.³ B60R 9/04

U.S. Cl. 414—462 **15 Claims**



1. A roof top carrier for vehicles comprising a frame to be supported by the roof of a vehicle, transport means supported by said frame, a housing supported by said transport means for transporting said housing away from its stored position on said roof down to the side of said vehicle to its loading and unloading position and back again to said stored position without any substantial change of the vertical or horizontal orientation of said housing, said transport means includes first and second telescoping slidable arms, said first telescoping slidable arms are slidably received and horizontally supported by said frame by bearings for transporting said housing generally horizontally away from said stored position on said roof of said vehicle, said second telescoping slidable arms are slidably received and vertically supported by a frame member by bearings, said frame member carried by said first telescoping slidable arms for transporting said housing generally vertically down to the side of said vehicle to its loading and unloading position, first travel limiting means is provided on said first telescoping slidable arms to limit the horizontal travel of said housing away from said stored position on said roof of said vehicle, second travel limiting means is provided on said second telescoping slidable arms to limit the vertical travel of said housing down to the side of said vehicle to its loading and unloading position, said frame comprises a plurality of members at least two of which members are substantially parallel to each other and are positioned on said roof perpendicular to the longitudinal axis of said vehicle, there being one each of said parallel members fore and aft of said housing when it is in its stored position, said first telescoping slidable arms include telescoping slidable arms received within said parallel frame members, said parallel frame members being generally horizontal with respect to said vehicle roof, there are at least two first telescoping slidable arms telescopingly received within each said parallel frame member, at least one of said first telescoping slidable arms is horizontally fixedly attached to said housing, said horizontally fixedly attached telescoping slidable arm being horizontally slidably removable from said other telescoping slidable arm received within said parallel frame members, said housing

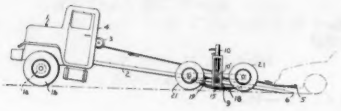
being free to be transported generally vertically downward by said second telescoping slidable arms to the side of said vehicle to its loading and unloading position when said horizontally fixedly attached telescoping slidable arm is so removed from said other telescoping slidable arms.

4,260,315

ELEVATABLE BED VEHICLE

Joseph A. Bouffard, 8160 Williams Rd., Apt. 278, Richmond, British Columbia, Canada (V7A 1G5)

Filed Apr. 13, 1978, Ser. No. 895,930
Int. Cl.³ B60P *1/04*
U.S. Cl. 414—469 **4 Claims**



1. An elevatable bed vehicle comprising a chassis equipped with front wheels, a front wheel drive, a flat bed rigidly secured to said chassis and over the latter, said flat bed having longitudinal sides and a rear loading end, a transverse shaft entirely extending across and underneath said flat bed and attached to the same, a set of tandem ground-engaging wheels located on each longitudinal side of said flat bed adjacent the loading rear end of the latter and spaced outwardly from the respectiive longitudinal sides; two identical jacking means, one located on each longitudinal side of said flat bed and between each set of said wheels, each said jacking means including an upright tubular guide member, non-circular in internal cross-section and having a lateral vertically-oriented interior slot, each said slot freely receiving the corresponding outer end portion of said transverse shaft, a block in which each corresponding outer end of said shaft is journalled, said block being slidable, but not rotatable, within said guide member; each said set of ground-engaging wheels being rotatively secured to said guide member, thereby supporting the latter in upright position, said jacking means further including power means carried by said guide member and connected to said block to move the latter along said guide member, whereby said elevatable bed may be raised and lowered from a first horizontal travel position to a second inclined position wherein the said loading rear end is in touch with the ground, and wherein said ground-engaging wheels are in contact with the ground in any position of the elevatable bed.

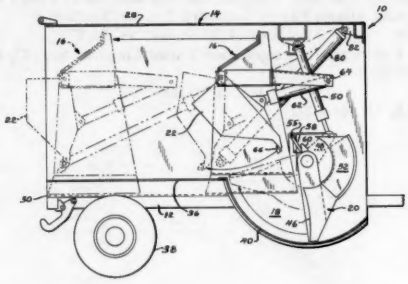
4,260,316

REFUSE COLLECTION VEHICLE

Cyril R. Gollnick, Oshkosh, Wis., assignor to Leach Company, Oshkosh, Wis.

Filed May 11, 1979, Ser. No. 38,345
Int. Cl.³ B65F *3/20*
U.S. Cl. 414—501 **37 Claims**

1. A refuse collection vehicle comprising a storage body, a packer plate movable fore-and-aft in said body; a collection hopper at one end of said body and opening through the side thereof; a hopper plate cooperatively associated with said hopper and movable along a path between a retracted position and an extended position to lift and remove refuse from said hopper; opening means in said packer plate communicating with said hopper and a sweep panel carried by said packer plate and movable along a path between a retracted position forward of said packer plate and an extended position adjacent said packer plate opening means, the path of said sweep panel passing adjacent said extended hopper plate position to sweep refuse from said hopper plate and through said opening means, said packer plate and sweep panel together comprising a unit substantially spanning said body and movable together fore-



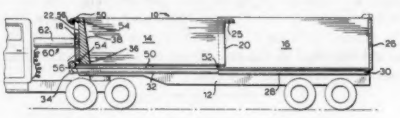
and-aft within said body for compressing or discharging refuse contained therewithin.

4,260,317

TELESCOPIC BODY WITH EJECTION BULKHEAD

Paul H. Martin, Willowdale, and John C. Martin, Toronto, both of Canada, assignors to Diesel Equipment Limited, Toronto, Canada

Continuation-in-part of Ser. No. 850,934, Oct. 3, 1977, abandoned. This application Nov. 1, 1978, Ser. No. 956,820
Int. Cl.³ B60P *1/00*
U.S. Cl. 414—517 **9 Claims**



1. A telescopic container body comprising;

(a) an inner section and an outer section, the inner section being mounted in the outer section for movement with respect to the outer section between an extended position and a contracted position, the inner section and the outer section each having a front end and a back end, the back end of the inner section opening into the front end of the outer section, the back end of the outer section having means for permitting a load to be discharged therethrough.

(b) an ejection bulkhead mounted in said inner section and extending transversely thereacross, said ejection bulkhead being mounted for movement between a loading position disposed adjacent the front end of said inner section and a discharge position disposed adjacent the back end of said inner section,

(c) an extensible hydraulic drive assembly having a first end secured with respect to the front end of said inner section and a second end secured to said bulkhead,

(d) first guide means on said inner section adjacent the back end thereof,

(e) flexible connector line means connected at a first end thereof to said bulkhead and being secured at the other end thereof against movement in response to telescoping movement of said inner section with respect to said back section, said flexible connector means extending from the ejection bulkhead toward the front end of said inner section, around said first guide means and thereafter toward the front end of said outer section to be retained at a point adjacent the front end of said outer section whereby extension of said extensible hydraulic drive assembly drive said bulkhead relative to said inner section in a direction towards said discharge position and thereby moves said

one end of said flexible connector means away from said first guide means to effect a simultaneous movement of said inner section with respect to said outer section in a direction toward said contracted position, and

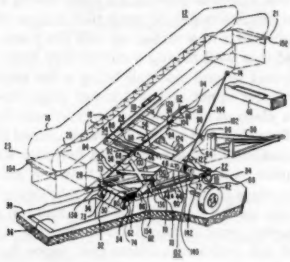
(f) means for moving the telescopic container body to the extended position and simultaneously moving the ejection bulkhead to the loading position.

4,260,318

INSTALLATION APPARATUS FOR ESCALATORS

Robert F. Holritz, Jersey City, N.J., and Robert C. Stewart, deceased, late of Morris County, N.J. (by Dorothy M. Stewart, executrix), assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 8, 1979, Ser. No. 64,933
Int. Cl.[3] B66F 7/22
U.S. Cl. 414—589 4 Claims



1. Escalator installation apparatus, comprising:

wheeled support means,

scissors lift means mounted on said wheeled support means,

said scissors lift means including first and second spaced, interconnected similar side portions each having first and second lower arm members and first and second upper arm members, said first and second lower arm members being pivotally interconnected at substantially their midpoints to provide lower ends which are connected to said wheeled support means, and upper ends, said first and second upper arm members having first ends pivotally connected to the upper ends of the first and second lower arm members, respectively, and pivotally interconnected second ends,

cylinder means operable to cause said scissors lift means to occupy a predetermined vertical position, between predetermined retracted and extended positions,

escalator truss support and locator means pivotally mounted on said scissors lift means, on a pivot axis which extends between the pivotally interconnected second ends of the first and second upper arm members of the first and second side portions of said scissors lift means,

said escalator truss support and locator means being adapted to support an escalator truss having a longitudinal axis such that when said scissors lift means is in its retracted position the longitudinal axis is substantially horizontally oriented, and when the scissors lift means is extended to elevate the escalator truss support and locator means, the first and second upper arm members operate from a substantially horizontal orientation to an inclined orientation which permits the longitudinal axis of the escalator truss to be oriented to the desired angle about the pivot axis,

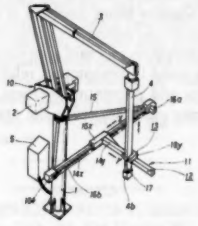
said means for pivoting said escalator truss support and locator means about said pivot axis, to provide rotational adjustment of the escalator truss within the limits established by the upper arm members of the scissors lift means, as well as the vertical adjustment provided by said scissors lift means.

4,260,319

END POSITION CONTROL ROBOT

Kenro Motoda, Tokyo, and Kensuke Hasegawa, Yokohama, both of Japan, assignors to Motoda Denshi Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 888,148, Mar. 16, 1978, Pat. No. 4,177,002. This application Jul. 20, 1979, Ser. No. 59,373
Claims priority, application Japan, Jul. 28, 1978, 53-92324
Int. Cl.[3] F41F 9/04; B25J 9/00
U.S. Cl. 414—591 6 Claims



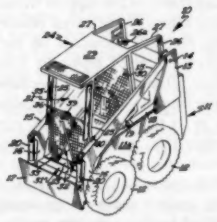
1. An end position control robot, comprising: a main body; weight control means mounted on said main body, said weight control means comprising driving means mounted on said main body, an operating arm connected to said drive means for being moved with respect to said body and lifting means mounted on said operating arm for supporting a load and for moving said load vertically; position control means mounted in fixed position relative to said main body, said position control means comprising horizontal guide means and driving control means movable horizontally along said guide means to a selectable position thereon, said lifting means being coupled to said driving control means so that said lifting means can be operated to move a load vertically independently of said driving control means and so that said lifting means is movable horizontally by movement of said driving control means along said horizontal guide means.

4,260,320

SAFETY DEVICE FOR A FRONT END TYPE LOADER VEHICLE

Bruce W. Steiger, Thief River Falls, Minn., assignor to Hydra-Mac, Inc., Thief River Falls, Minn.

Filed Jun. 11, 1979, Ser. No. 47,056
Int. Cl.[3] B65D 45/30
U.S. Cl. 414—680 6 Claims



1. An off highway front end loader vehicle comprising a vehicle body having front and rear ends and having opposed sides,

ground engaging wheel supporting the body for travel over the ground,

a forwardly facing operator's compartment intermediate the ends of said vehicle,

a pair of lift arms each being pivotally connected to said body adjacent the rear end thereof for vertical swinging

movement thereto, said lift arms extending along the sides of said body passed the operator's compartment,

means for raising and lowering said lift arms between raised and lowered positions,

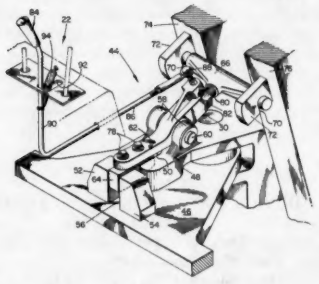
a safety device comprising a pair of similar vertically disposed gate members, means pivotally connecting each of said gate members to one side of the vehicle body forwardly of the operator's compartment for swinging movement of the gate members about a vertical axis between opened and closed positions, said gate members when in the closed position being disposed in obstructing relation with respect to the operator's compartment and preventing egress therefrom and said gate members having means thereon disposed in obstructing relation with respect to the lift arms and preventing vertical movement thereof when the gate members are in the opened position.

4,260,321

LOCK MECHANISM FOR SECURING A BACKHOE BOOM AND SWING FRAME FOR TRANSPORT

Lynn I. Beauchamp, and LeRoy E. Kraske, both of Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Sep. 4, 1979, Ser. No. 71,960
Int. Cl.[3] E02F *3/32*
U.S. Cl. 414—694 **7 Claims**



1. In combination with a backhoe assembly including a support frame, a swing frame, a vertical pivot assembly connecting the swing frame to the support frame for pivotal movement to opposite sides of a centered position, and a backhoe boom vertically pivotally mounted on the swing frame for movement between a raised transport position and selected working positions, a transport latch mechanism for selectively locking the swing frame in its centered position and locking the backhoe boom in its transport position, comprising: an elongate latch member fulcrumed between opposite ends thereof on the swing frame for pivotal movement about a transverse axis between lock and unlock positions and including first and second latching surface means respectively at the opposite ends thereof; third latching surface means integral with the mounting frame; fourth latching surface means integral with the swing frame adjacent the third latching surface means; fifth latching surface means integral with the backhoe boom; said first, third and fourth latching surface means and said second and fifth latching surface means respectively being arranged for interengagement for preventing movement of the swing frame from its centered position and for preventing movement of the boom from its transport position when the latch member is in its lock position.

4,260,322

INTEGRAL BOX SECTION BOOM ARM

Thomas M. Cameron, Waukegan, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Oct. 12, 1978, Ser. No. 950,936
Int. Cl.[3] B66C *23/00*; E02F *3/76*; E04C *3/30*
U.S. Cl. 414—727 **1 Claim**

1. A boom arm assembly for use on a loader vehicle comprising:

a pair of boom arms each boom arm comprising;

a first side wall having a curvalinear upper and a lower edge, said first side wall being a flat plate having said upper and lower edges straight cut such that a plane of each edge is perpendicular to a surface of said flat plate;

a second side wall having a curvalinear upper and a lower edge, said second sidewall being a flat plate having said curvalinear upper and said lower edge straight cut such that a plane of each edge is perpendicular to a surface of said flat plate, said second side wall spaced apart from and longitudinally aligned with said first side wall;

a top plate welded in position between said curvalinear upper edges of said first and second sidewalls to join said first and second sidewalls together, said top plate having a transverse cross sectional shape that has flat parallel inboard and outboard surfaces and edges that are stepped down from the outboard surface to the inboard surface of said top plate;

a pair of bottom plates, identified as forward and rear bottom plates, each welded in position between said lower edges of said first and second side walls to join them together, said bottom plates having a transverse cross sectional shape that has flat parallel inboard and outboard surfaces and edges that are stepped down from the outboard surface to the inboard surface of said bottom plates;

a first and a second boom arm end, one boom arm end welded to each of said box section boom arms, each boom arm end being a casting formed with a sidewall contacting portion forming a weld bed and, each boom arm end having a through bore;

a boom pocket casting formed with a sidewall contacting portion forming a weld bed welded to said lower edge of said first and second sidewalls between said forward and said rear bottom plates, said boom pocket casting having a through bore defining a centerpoint;

a torque tube casting connecting one of said pair of boom arms to the other of said pair of boom arms, said torque tube casting including a pair of bell crank pivot members each having a bore defining a centerpoint whereby said centerpoint of said boom pocket casting is generally an equal distance from said centerpoint of said first boom arm end and said centerpoint of said first boom arm end and said centerpoint of said bore of said bell crank pivot member.

4,260,323

GRAPPLE HEAD ARRANGEMENT

John R. Muntjanoff, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00584, § 371 Date Aug. 9, 1979, § 102(e) Date Aug 9, 1981, PCT Pub. No. WO 81/00396, PCT Pub. Date Feb. 19, 1981
This PCT application filed Aug. 9, 1979, Ser. No. 88,721
Int. Cl.[3] B66C *1/32*
U.S. Cl. 414—731 **11 Claims**

1. A compact grapple head (10) comprising:

a frame (12);

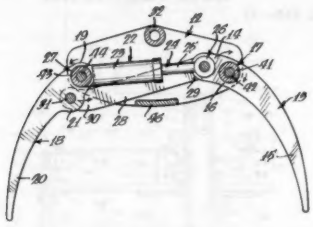
a first tong (13) having a first portion (14), a second portion (15) spaced from said first portion, and a third portion (16) intermediate said first and second portions;

first pivot means (17) pivotally mounting said intermediate third portion (16) to said frame (12);

a second tong (18) having a first portion (19), a second portion (20) spaced from said first portion thereof, and a third portion (21) intermediate said first and second portions thereof;

extensible means (22) having first (23) and second (24) adjustably spaceable portion;

second pivot means (26) pivotally connecting one (24) of said spaceable portions to said first tong first portion (14), said second pivot means defining a pivot pin;



third pivot means (27) pivotally connecting said second tong first portion (19) to said frame (12) and the other of said spaceable portions (23) to said second tong first portion (19) and said frame (12);

a link (28) having first (29) and second (30) connecting portions, said link first portion (29) being pivotally connected to said first tong first portion (14) by said pivot pin of the second pivot means (26); and

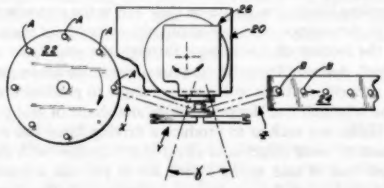
a fourth pivot means (31) pivotally connecting said link second portion (30) to said second tong third portion (21), whereby said tong second portions (15,20) define adjustably opposed grasping means controlled by the adjusted arrangement of said extensible means (22) connected between said tong first portions (14,19).

4,260,324

CAM-ACTUATED SWING TURNOVER AND TRANSFER PLACING APPARATUS

Max V. Graaf, Glenview, and Josef Mang, Palos Hills, both of Ill., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 11, 1979, Ser. No. 29,064
Int. Cl.³ B65G 47/86
U.S. Cl. 414—735 **9 Claims**



1. In a workpiece handling apparatus for inverting a workpiece while transferring the same between adjacent work stations, the combination of:

oscillator drive means having an oscillating output shaft;

indexer drive means having a base frame and an output shaft and characterized as having said base frame rotatably mounted on said oscillator drive means;

motor-driven drive shaft means operatively associated with both said oscillator and indexer drive means, and providing rotational input to both said drive means;

means connecting said output shaft of said oscillator drive means to said base frame of said rotatably-mounted indexer drive means, whereby said oscillator drive means controllably oscillates said indexer drive means between positions in close proximity to adjacent work stations; and

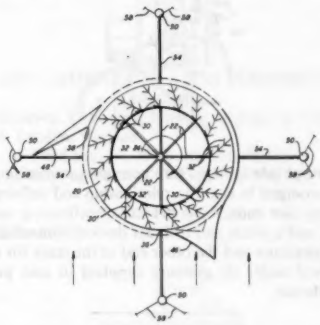
a transfer arm assembly having multiple transfer arm members, said assembly connected to the output shaft of said indexer drive means and controllably indexed through rotational segments thereby, each of said transfer arm members characterized as being operable, when both said indexer drive means and transfer arm assembly are oscillated by said oscillator drive means and when said transfer arm assembly is rotatably indexed by said indexer drive means, to pick up a workpiece at a first work station, and to invert the same before transferring and placing it at a second work station.

4,260,325

PANEMONE WIND TURBINE

Hermann K. Cymara, R.D. #2, 176 Horton Rd., Newfield, N.Y. 14867

Filed Nov. 7, 1979, Ser. No. 92,226
Int. Cl.³ F03D 3/04
U.S. Cl. 415—2 R **5 Claims**



1. A panemone wind turbine comprising, in combination:

(a) upper and lower planar, annular support members mounted in spaced, horizontal planes for rotation about a central, vertical axis;

(b) a plurality of rectangular vanes each affixed along opposite horizontal edges to said upper and lower support members and having inner and outer free vertical edges, said inner edge being substantially spaced from said axis;

(c) each of said vanes lying in a plane at a predetermined, obtuse angle to a line extending radially from said central axis to said inner vertical edge of each vane;

(d) a plurality of rectangular fins of the same height and substantially smaller width than said vanes affixed along opposite horizontal edges to said upper and lower support members, and along one vertical edge to the surfaces of each of said vanes;

(e) said fins being affixed in spaced relation to one another along both surfaces of each of said vanes, each fin attached to one vane surface lying directly adjacent a fin attached to the opposite vane surface, whereby said fins are arranged in pairs along opposite vane surfaces;

(f) each fin being disposed at a predetermined acute angle to the vane to which it is affixed, whereby each fin forms a V with respect to the associated vane, the open end of the V facing away from said central axis to catch wind and receive motive force therefrom when the vane is parallel to the wind direction;

(g) a shroud mounted for rotation about said central axis and

partially surrounding said vanes and support members and having an open side defined by two vertical edges spaced greater than 90° and less than 180° about the periphery of said shroud;

(h) a wind deflecting surface mounted upon said shroud outwardly of each of said vertical edge to direct wind more efficiently upon said vanes and fins; and

(i) a rudder attached to said shroud for rotating the latter in response to wind direction to position said open side in the upwind direction.

4,260,326

BLADE FOR A GAS TURBINE ENGINE

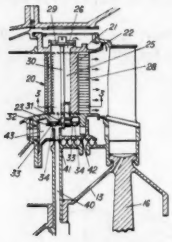
Alexander Scott, and Roy Simmons, both of Bristol, England, assignors to Rolls-Royce Limited, London, England

Filed Jul. 18, 1974, Ser. No. 489,151

Claims priority, application United Kingdom, Jul. 26, 1973, 35579/73

Int. Cl.³ F01D *5/18, 9/02*

U.S. Cl. 415—115 **8 Claims**



1. A stator blade for a gas turbine engine, comprising laminar sections arranged in abutting relationship and defining a stack having opposite ends, fixed structure confronting one end of the stack, and a piston and cylinder device connected between the fixed structure and the other end of the stack for compression thereof under air pressure supplied to said piston and cylinder device.

4,260,327

GUIDE VANE ASSEMBLY FOR REVERSE FLOW COOLED DYNAMOELECTRIC MACHINE

Anthony F. Armor, Schenectady; William L. Darby, Scotia, and James M. Anderson, Cohoes, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 25, 1979, Ser. No. 60,642

Int. Cl.³ F04D *29/44, 29/38, 29/02*

U.S. Cl. 415—200 **14 Claims**

1. A guide vane assembly for use in a reverse flow dynamoelectric machine comprising:

a pair of radially spaced outer and inner support rings each comprising a composite structure of polyester bonded layers of fiberglass woven roving fabric, each of said rings having an integral structure along the axial dimension thereof; and,

a plurality of airfoil shaped guide vanes mounted radially between said support rings in circumferentially spaced relation with one another and each comprising a composite structure of epoxy-bonded layers of fiberglass crossplies.

4,260,328

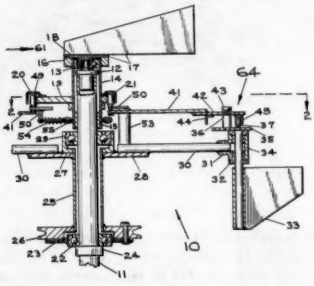
WINDMILL

Roland R. Hamel, Whispering Pines Rd., Stafford Springs, Conn. 06076

Filed Mar. 10, 1980, Ser. No. 129,026

Int. Cl.³ F03D *7/06, 3/06*

U.S. Cl. 416—17 **5 Claims**



1. A vertical axis windmill, comprising a vertical support pipe, a drive tube rotatably mounted on said support pipe, a disc attached to the top of said drive tube, a plurality of horizontal support bars extending outward attached to said disc, a rotatably mounted vertical shaft at the end of each said support bar, a crank arm attached to the top of said vertical shaft and a propelling blade fastened to the lower part of said vertical shaft, a cam tube rotatably mounted on said support pipe above the said drive tube, means for mounting a cam on said cam tube, a wind vane fixed to said cam tube for rotating said cam tube in response to a change in the direction of the wind, means for supporting a plurality of oscillating arms, a cam roller mounted on the end of each said oscillating arm, said cam rollers bearing against said cam by a spring means, means for mounting a connecting rod to each cam roller shaft, a slide plate attached to the other end of said connecting rod, a "past center device" connecting said slide plate to said crank arm, to translate the reciprocating motion of the said connecting rod, to rotary motion of said crank arm, said vertical shaft and said propelling blades that rotate on their axis in the opposite direction to the rotation of the windmill, the assembly of these parts and the motion of the linkage, through the said "past center device", deriving from the contour of said cam act to position said propelling blades to the proper angle to produce rotation of the windmill and the proportions and shape of said propelling blades are such as to produce a driving force and a small amount of wind directional effect that together with the designed load of said spring means act to provide a maximum speed control of the rotation of the windmill, therefore if a wind force on said propelling blades exceeds the said load of said spring means the angle of said propelling blade changes thus reducing the said driving force and maintaining the designed rotating speed and as each said propelling blade is independent of the others, a strong wind gust can feather any blade immediately to avoid damage, and as the wind force abates the said propelling blade resumes its normal position as all said propelling blades are in continuous control by the mechanism through the full rotation of the windmill.

4,260,329

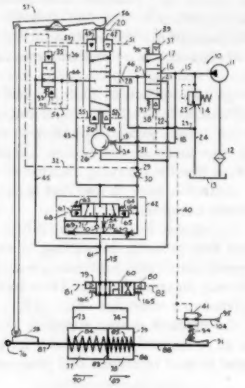
PROPELLER PITCH AND ENGINE LOAD CONTROL APPARATUS

John I. Bjorknas, 2716 Panarama Dr., North Vancouver B.C., Canada

Filed Feb. 12, 1979, Ser. No. 11,711

Int. Cl.³ B63H *3/08*

U.S. Cl. 416—43 **14 Claims**



1. An apparatus, for automatically controlling the load on an engine in a vessel by controlling the pitch of a variable pitch propeller, comprising a pitch inching pilot valve, a load control pilot valve, a pressure feedback valve assembly, pitch direction selector valve, a servo power cylinder assembly, said pitch inching pilot valve and load control pilot valve and pressure feedback valve assembly and pitch direction selector valve and servo power cylinder assembly operatively connected in series to a fluid pressure source, said pitch inching pilot valve and load control pilot valve and pitch direction selector valve operatively connected to a fluid sump, a load control bypass valve operatively connected in parallel with said pressure feedback valve assembly and receiving pilot control signals from opposite sides of said load control pilot valve, whereby said load control bypass valve alternatively opens to permit manual pitch control by said pitch inching pilot valve and closes to provide automatic load control by said load control pilot valve and said pressure feedback valve assembly.

4,260,330

IMPELLER BLADE FOR A HYDRODYNAMIC TORQUE CONVERTER

Eberhard Frötschner, Gerlingen, and Hans-Georg Offterdinger, Ostfildern, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

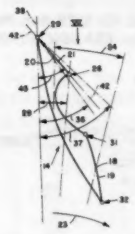
Filed Aug. 20, 1979, Ser. No. 67,789

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1978, 2836332

Int. Cl.³ F16H *41/26*

U.S. Cl. 416—180 **22 Claims**

1. A blade for an impeller of a hydrodynamic torque converter, the impeller being delimited by an inner and outer torus, the blade including a leading edge and a trailing edge, and a central flow thread for dividing the cross-sectional flow area into two equal portions, the central flow thread intersects a point of the leading edge and a point of the trailing edge, the point of intersection of the leading edge is displaced with respect to the point of intersection of the trailing edge along a smaller diameter as well as by an angle of rotation leading in a direction of rotation of the impeller, and the trailing edge is disposed in a radial plane at least approximately perpendicular to an axis of rotation of the impeller, characterized in that the point of the leading edge has a leading angle of about 30° to 40°, and in that the trailing edge is inclined at a trailing angle with respect to the axial plane containing the impeller axis and a corner point between the outer torus and the trailing edge by



approximately 35°–45° such that a corner point of the trailing edge at the inner torus is displaced by an angle of rotation in the direction of rotation toward a front with respect to a corner point at the outer torus.

4,260,331

ROOT ATTACHMENT FOR A GAS TURBINE ENGINE BLADE

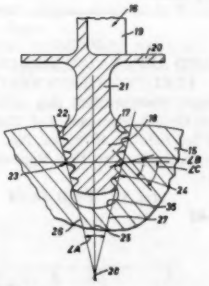
John R. Goodwin, Ockbrook, England, assignor to Rolls-Royce Limited, London, England

Filed Sep. 17, 1979, Ser. No. 76,436

Claims priority, application United Kingdom, Sep. 30, 1978, 38835/78

Int. Cl.³ F01D *5/30*

U.S. Cl. 416—219 R **6 Claims**



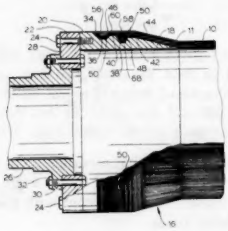
1. A root attachment for a blade of a gas turbine engine comprises a firtree root on the blade, and a rotor having a correspondingly shaped groove formed therein and with which the root engages, the root having a plurality of teeth each comprising a pair of angled faces joined by a convex radiused portion and concave radiused portions which join each tooth to the next adjacent teeth, the teeth being disposed in two plane arrays symmetrical about a plane through the longitudinal axis of the root and diverging from the innermost part of the root at an angle of 35°±1°, each said pair of angled faces being disposed at an angle of 60°±1° to each other and the outermost of each pair of faces lying at an angle of 45°±2° to a normal to said plane, the ratio of the tooth height measured at right angles to said plane, to the radius of said radiused portions lying in the range 1.5:1 to 2:1.

4,260,332

COMPOSITE SPAR STRUCTURE HAVING INTEGRAL FITTING FOR ROTATIONAL HUB MOUNTING

Oscar Weingart, Riverside, and Edgar E. Morris, Covina, both of Calif., assignors to Structural Composite Industries, Inc., Azusa, Calif.

Filed Mar. 22, 1979, Ser. No. 22,888
Int. Cl.[3] B64C 11/20
U.S. Cl. 416—226 26 Claims



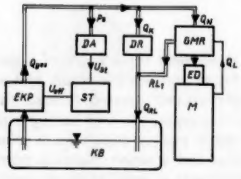
1. A hollow, filament wound spar structure adapted for rotational hub mounting under centrifugal and bending loads, said structure comprising an integrally wound, filament and resin composite spar of a predetermined wall thickness, a fitting integrally wound therein, said fitting defining rotational hub fastening means and comprising a plug having mechanical engagement groove and land means circumferentially of the longitudinal axis to the surface contour of which the opposing spar wall portion conforms responsive to winding fabrication of the spar wall on said fitting, and separately formed belt means opposite said groove and land means locally peripherally confining said conformed spar wall portion and the axially adjacent spar wall portion in said groove means and against said plug respectively in mechanical engagement reinforcing relation against relative dislodgement of said spar wall portion in the mounted condition of the spar structure, under centrifugal and bending loads.

4,260,333

METHOD AND APPARATUS FOR CONTROLLING A FUEL INJECTION SYSTEM

Rainer Schillinger, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 28, 1979, Ser. No. 15,997
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1978, 2808731
Int. Cl.[3] F04B 49/06
U.S. Cl. 417—45 8 Claims



1. A method for controlling the operation of a fuel injection system, said system including a fuel reservoir, a fuel mixture controller, at least one fuel injection means fed by said controller, a fuel supply pump responsive to electric power for pumping fuel from said reservoir to said fuel mixture controller and a fuel return line for carrying excess fuel not used by said fuel mixture controller back to said fuel reservoir and said method comprising the steps of:

monitoring an actual fuel pressure prevailing near an inlet of said fuel injection means;

converting said actual fuel pressure into a corresponding voltage signal;

comparing said actual (fuel pressure) voltage signal with a reference (pressure) signal; and

altering an effective supply voltage to said fuel supply pump thereby altering its operating characteristics so as to maintain said actual fuel pressure substantially equal to said reference signal; whereby the average amount of fuel returned through said fuel return connected to said fuel reservoir is reduced as compared with constant full power operation of said fuel supply pump.

6. A fuel injection system including a fuel reservoir, a fuel mixture controller, at least one fuel injection means fed by said controller, a fuel supply pump responsive to electric power for pumping fuel from said reservoir to said fuel mixture controller and a fuel return line for carrying excess fuel not used by said fuel mixture controller back to said fuel reservoir and wherein the improvement comprises:

a pressure transducer for generating a first signal related to the actual fuel pressure prevailing in said fuel injection system upstream of said fuel mixture controller; and

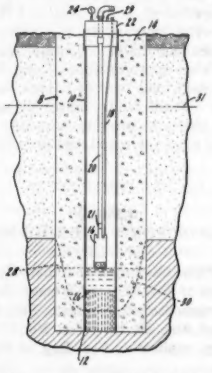
a control device for comparing said first signal with a second signal related to a reference value of fuel pressure and for altering the electric power supplied to said fuel supply pump so as to maintain said actual fuel pressure substantially equal to said reference fuel pressure.

4,260,334

GROUND DEWATERING SYSTEM

Lawrence G. Kelley, Glenview, Ill.; Wayne E. Nelson, Fenton, and Clark J. Quist, Holland, both of Mich., assignors to Kelley Contract Dewatering Company, Glenview, Ill.

Filed Feb. 11, 1976, Ser. No. 657,247
Int. Cl.[3] F04B 17/00
U.S. Cl. 417—52 5 Claims



1. In a dewatering system, a solid airtight casing generally vertically disposed in the ground with the upper end thereof being sealed and disposed generally at the surface, a screen across the lower end of the casing, a pump inside the casing at a level above the screen so that water will rise above the screen inside the casing to seal the lower end of the casing to prevent air in the surrounding soil from flowing through the screen and into the lower end of the casing, and a water discharge line from the pump up through the casing to discharge water at the surface.

5. A method of dewatering the ground around and adjacent to an excavation in which an impervious sealed casing is disposed in a generally upright position in a hole in the ground with a screen across the lower end and a pump positioned in the casing adjacent the bottom with a discharge line extending

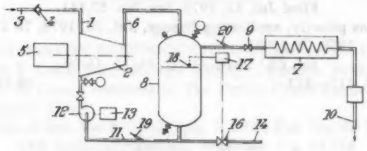
upwardly therefrom to discharge water that collects in the hole, including the step of positioning the pump at a level no lower than the bottom end of the casing so that water will rise in the hole to a level to seal off the lower end of the casing, thereby preventing air in the surrounding ground formation from flowing inwardly through the screen into the lower end of the casing and breaking the vacuum created therein.

4,260,335

PROCESS FOR THE COMPRESSION OF STEAM AND THERMAL CIRCUITS FOR ITS IMPLEMENTATION

Paul H. Marchal, Garches, France, assignor to Air Industrie, Courbevoie, France

Filed Dec. 13, 1977, Ser. No. 860,045
Claims priority, application France, Dec. 15, 1976, 76 37754
Int. Cl.³ F04C *19/00*
U.S. Cl. 417—68 **10 Claims**



1. A thermal circuit for supplying saturated water vapor under pressure comprising a water vapor liquid ring compressor using water as means of compression, having a vapor inlet connected to a source of pure water vapor at low pressure and a water inlet connected to a source of water for compression; a first separator comprising a chamber having a vapor top portion which is connected to a discharge vapor outlet of the compressor and to the inlet of a user for compressed saturated water vapor, and a water bottom portion connected to the water inlet of said compressor downstream of said source of compression water for recycling water thereto, and means for controlling the flow of new water to said compressor in response to the level of water in said first separator so that the level of water in said first separator will be kept approximately constant, said source of pure water vapor at low pressure including an condenser/evaporator, the condenser portion of which communicates with a source of water vapor and/or of wet air and evaporator portion of which communicates with the vapor top portion of a second separator, the vapor portion of said second separator having on the top an outlet connected to said vapor inlet of said compressor, the water bottom portion of the second separator communicating on the one hand with the inlet of the evaporator and on the other hand with a source of compression water, said second separator having means for controlling the feed of compression water to said condenser/evaporator in response to the level of water in said second separator, so that the level of water in said second separator will be kept approximately constant.

4,260,336

COOLANT FLOW CONTROL APPARATUS FOR ROTATING HEAT EXCHANGERS WITH SUPERCRITICAL FLUIDS

Bruce V. Johnson, Manchester, Conn., assignor to United Technologies Corporation, Hartford, Conn.

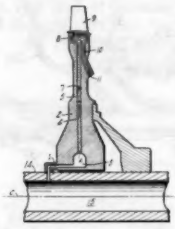
Filed Dec. 21, 1978, Ser. No. 972,183
Int. Cl.³ F01D *5/08, 5/18*
U.S. Cl. 416—96 R **3 Claims**

1. A rotating apparatus subassembly comprising:

a disc adapted to be mounted on a shaft for rotation therewith having around its periphery a plurality of heat exchangers, the disc having a plurality of internal passages extending radially outward from a coolant fluid inlet to the heat exchangers and a plurality of internal passages extending from the heat exchangers to coolant fluid outlets, the heat exchangers having internal coolant passages in fluid communication with the internal passages in the disc;

a coolant supply source with means for metering the coolant flow rate through the passages extending from the coolant inlet to each heat exchanger comprising a coolant collection surface plenum and a continuously open inlet orifice, and

means for metering the coolant flow rate through the passages extending to the coolant outlet from each heat exchanger comprising a continuously open outlet orifice,



said metering means for each heat exchanger sized to restrict coolant flow through each heat exchanger to produce supercritical pressure and temperature of the selected coolant within the heat exchanger and passages extending to the coolant outlet over a range of heat exchanger heat fluxes,

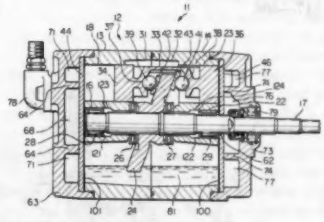
the metering means for the coolant inlet being sufficiently close to the rotational center line of the disc to produce a coolant liquid-vapor interface in the passages extending from the coolant inlet when the subassembly is at operating equilibrium.

4,260,337

SWASH PLATE COMPRESSOR

Hiroshi Nomura, Konan, Japan, assignor to Diesel Kiki Company, Ltd., Tokyo, Japan

Filed Jan. 26, 1979, Ser. No. 6,783
Claims priority, application Japan, Jan. 31, 1978, 53/10888[U]; Mar. 25, 1978, 53/38758[U]
Int. Cl.³ F04B *1/14*
U.S. Cl. 417—269 **4 Claims**



1. A compressor including a cylinder formed with a bore, a piston slidably disposed in the bore, bearing means disposed in the cylinder, a shaft rotatably supported in the cylinder by the bearing means and mechanism means correcting the shaft to the piston in such a manner that rotation of the shaft causes reciprocation of the piston, characterized by comprising a passageway connecting the bore to the bearing means in such a manner that fluid and entrained lubricant compressed in the bore by movement of the piston are fed from the bore to the bearing means through the passageway;

the bearing means comprising a journal bearing, the passageway extending radially through the journal bearing.

4,260,338

MULTICYLINDER PUMP FOR VISCOUS LIQUIDS

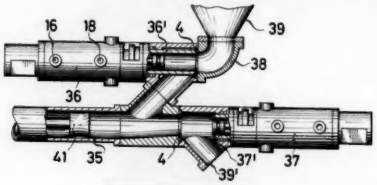
Manfred Haas, Herten, Fed. Rep. of Germany, assignor to Friedrich Wilh. Schwing GmbH, Fed. Rep. of Germany

Filed Jun. 8, 1979, Ser. No. 47,031

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1978, 2825144

Int. Cl.³ F04B *21/02, 35/02*

U.S. Cl. 417—346 **10 Claims**



1. In a piston pump for pumping fluids of varying composition wherein said pump having at least two cylinders and hydraulic pressure means, one of said at least two cylinders operating in phased opposition to the other of said at least two cylinders, each of said at least two cylinders having a bore and a piston slidably mounted in said bore for reciprocation therein, wherein said improvement comprises:

extendible tubular piston valve means, mounted adjacent to each of said at least two cylinders and connected to said bore of each of said at least two cylinders for controlling the intake and the discharge of said fluids into each of said at least two cylinders; and

means, connected to said hydraulic pressure means, for alternatively closing and opening said extendible tubular piston valve means in response to the reciprocation of said piston.

4,260,339

TURBO COMPRESSOR

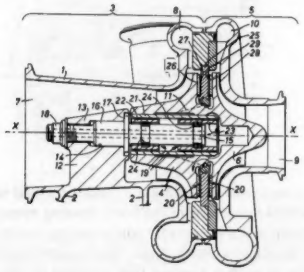
Denis L. Lofts, St. Albans, England, assignor to British Aerospace, Weybridge, England

Filed Mar. 20, 1979, Ser. No. 22,179

Claims priority, application United Kingdom, Mar. 22, 1978, 11295/78

Int. Cl.³ F04B *17/04*

U.S. Cl. 417—406 **11 Claims**



11. Turbo compressor apparatus including housing means, rotor means housed within the housing means, fixed shaft means, anchorage means fixedly anchoring only one end of the shaft means to the housing means, bearing means, radially locating the rotor means for rotation with respect to the shaft means, of the fluid type having two opposed surface members between which a working fluid lies at least during operation, one surface member being associated with the shaft means and the other being associated with the rotor means, said apparatus further including bearing means for axially locating the rotor means with respect to the shaft means, and reaction means anchored with respect to the shaft means, the bearing means for axial location comprising twin bearings of the fluid type each having two opposed surface members between which a working fluid lies at least during operation, one surface member of each twin bearing being associated with the rotor means and the other being associated with the reaction means.

4,260,340

ELECTRIC PUMP, PARTICULARLY FOR WINDSCREEN WASHERS

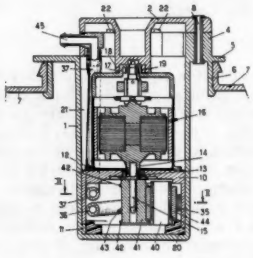
Paul F. T. Lamaudiere, Paris, France, assignor to AVRI S.A., France

Filed Jul. 12, 1979, Ser. No. 57,111

Claims priority, application France, Jul. 20, 1978, 78 21538; Jun. 21, 1979, 79 15936

Int. Cl.³ F04B *43/00, 43/12, 45/06*

U.S. Cl. 417—412 **18 Claims**



1. An electric pump, comprising

an electric motor and supply terminals electrically coupled thereto;

a pumping element operatively coupled to said motor; and

a sealed container in which said motor and said pumping element are housed including a tank, a lid covering said tank and a substantially cylindrical skirt for fixing said container to a neck of a reservoir.

4,260,341

HAND PUMP

Robert F. Rolsten, Dayton, Ohio, assignor to The Wright Company, Dayton, Ohio

Filed Jan. 2, 1979, Ser. No. 122

Int. Cl.³ F04B *21/06;* **F16L** *17/06*

U.S. Cl. 417—454 **4 Claims**

1. In a double acting pump including an elongated thin walled hollow barrel having an inlet end and a head end,

said ends of said barrel having outwardly turned edges,

an elongated hollow plunger having a discharge end and an inlet end slidably received in said barrel and defining with the inner surface thereof an annular space,

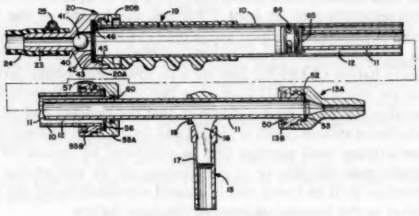
a two piece detachable fitting including one part on the head end of said barrel and a mating part including a seal between said one end of said barrel and the outer surface of said plunger, said parts of said fitting being engaged around the outwardly turned edge of said head end,

a valve assembly and seal mounted on the inlet end of said plunger, said seal engaging the interior of said plunger,

a nozzle on said discharge end of said plunger,

a two piece inlet fitting including one part on the inlet end of said barrel and a mating detachable part having an inlet

valve seat, said parts of said inlet fitting being engaged around the outwardly turned edge of said inlet end,



and a check valve captured between said parts of said inlet fitting and cooperating with said seat to allow flow into said barrel.

4,260,342

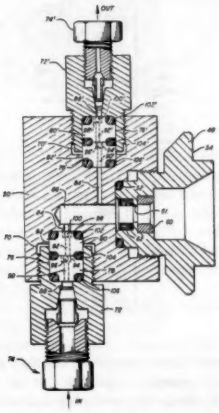
DUAL-PISTON RECIPROCATING PUMP ASSEMBLY

George T. Leka, Trumbull, and Roland C. Paradis, Bridgeport, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Division of Ser. No. 820,592, Aug. 1, 1977, Pat. No. 4,173,437. This application Feb. 22, 1979, Ser. No. 14,514

Int. Cl.[3] F04B *21/02*

U.S. Cl. 417—458 **3 Claims**



1. In a reciprocating pump assembly adapted for use in a liquid chromatography system having a cylinder head with a piston cylinder disposed therein, said cylinder head having an inlet passage extending outwardly from said piston cylinder, an inlet check valve and an outlet check valve, said inlet check valve comprising a first valve seat concentric with said inlet passage and a second valve seat eccentric with said inlet passage mounted in series with said first valve seat, said first valve seat having a straight throughbore axially aligned with said inlet passage and terminating in an enlarged portion adjacent said second valve seat, said eccentric valve seat having a straight throughbore terminating, at one end thereof, at said enlarged portion of said first valve seat and extending parallel with an offset from the axial plane of said inlet passage and terminating, at its other end, in an enlarged portion adjacent said cylinder head, a first check valve ball loosely disposed in said enlarged portion of said first valve seat and a second check valve ball loosely disposed in said second valve seat, whereby during piston cylinder refill said first ball moves inwardly and rests against the face of said eccentric valve and said second ball moves inwardly against the face of said cylinder head to thereby provide fluid flow communication through said valve seats and said inlet passage in said cylinder head, and during the pumping stroke the pressure of the fluid urges said second ball outwardly until it covers the inlet of said straight throughbore in said eccentric valve seat and moves said first ball outwardly until it covers said straight throughbore in said concentric valve seat to prevent the flow of fluid through said inlet check valve.

4,260,343

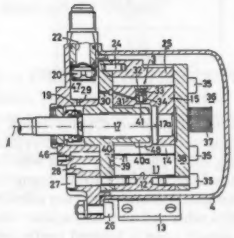
VANE COMPRESSOR

Risaburo Watanabe; Masami Ohtani, and Naoki Hashizume, all of Higashimatsuyama, Japan, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 29, 1979, Ser. No. 7,257

Int. Cl.[3] F04C *2/00*

U.S. Cl. 418—269 **13 Claims**



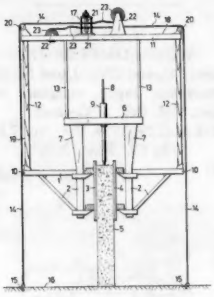
1. A vane compressor, comprising a hollow stator; a rotor received in said stator for rotation about an axis, said rotor being provided with a plurality of throughgoing passages extending radially and outwardly relative to said axis; a plurality of vanes, each received in one of said passages and having an outer end face directed towards an inner circumference of said stator and an inner end face directed away from said inner circumference of said stator, said vanes being shiftable radially in the respective passages relative to said axis; means for supplying pressure medium under a first pressure to said inner end faces of said vanes to thereby urge said vanes radially outwardly relative to said axis for engagement of said outer end faces with said inner circumference of said stator, said pressure medium supplying means including an annular chamber communicating with said inner end faces of said vanes; means forming a low-pressure chamber; means forming a high-pressure chamber operatively connected with said annular chamber so that pressure in said annular chamber is equal to that in said high-pressure chamber; means for rotating said rotor about said axis whereby said vanes are subjected to an additional second pressure resulting from centrifugal force, which second pressure additionally urges said vanes against the inner circumference of said stator, said first and second pressures together constituting a cumulative pressure which above a predetermined pressure level causes undesired frictional losses at the interfaces between said outer end faces of said vanes and the inner circumference of said stator; and means for decreasing said cumulative pressure at least slightly below said predetermined level to thereby eliminate said undesired frictional losses, said pressure decreasing means include means for connecting said annular chamber with said low-pressure chamber, said connecting means constituting a valve member movable in response to said cumulative pressure between a first position in which said annular chamber is disconnected from said low-pressure chamber and a second postion in which said annular chamber is connected with said low-pressure chamber for permitting the pressure medium flow from said annular chamber into said low-pressure chamber to thereby decrease said cumulative pressure urging said vanes into engagement with said inner circumference of said stator.

4,260,344

ARRANGEMENT FOR GUIDING CASTING FORMS

John P. Pettersson, Pl. 1130, 76015 Gräddö, Sweden

Filed Feb. 1, 1980, Ser. No. 117,762
Claims priority, application Sweden, Feb. 5, 1979, 7901006
Int. Cl.[3] E04G *11/22, 11/24*
U.S. Cl. 425—63 **4 Claims**



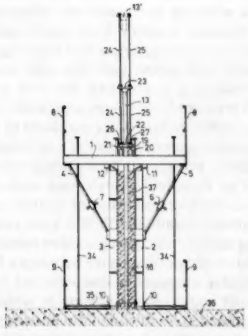
1. An arrangement for guiding casting forms, which comprise a working plane in the form of a beam system capable to support two casting form halves, between which concrete is intended to be poured, and which further comprise a yoke, in the form of, for example, a frame with two substantially vertical, mutually parallel sides and an intermediate side perpendicular to said sides, which yoke is located preferably above the working plane and rigidly connected to the working plane or to some detail(s) rigidly connected thereto, characterized in that at least two guide bridles (**14,23**) in the form of, for example, strip irons and a friction device (**17**) are provided, which guide bridles (**14**) are intended to be rigidly anchored at one end preferably in a ground level plane (**16**) and to be attached extendibly and with maintained tension therein by said friction device (**17**) also to the yoke (**11**) connected to said working plane (**1**), in order to stay a casting form in a vertical plane or in a plane forming an angle with the vertical plane.

4,260,345

ARRANGEMENT FOR CASTING CONCRETE WALLS

John P. Pettersson, Pl. 1130, 760 15 Gräddö, Sweden

Filed Aug. 21, 1979, Ser. No. 68,437
Claims priority, application Sweden, Sep. 4, 1978, 7809292
Int. Cl.[3] E04G *11/22, 11/24*
U.S. Cl. 425—65 **5 Claims**



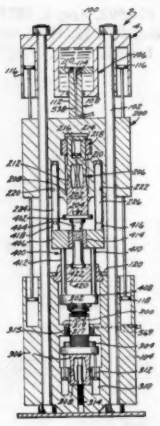
1. An arrangement for casting concrete walls, comprising a beam system (**1,50**), a so-called working plane, which beam system is capable to carry below it via struts (**4,5,53**) two form halves (**2,3,51,52**), between which concrete is to be poured, characterized in that a guide pipe (**13,56**) is located between the form halves and can be moved and locked relative to and at said beam system (**1,50**) that the pipe (**13,56**) has a length corresponding to at least 1.5 times the height of the form halves (**2,3,51,52**), which guide pipe (**13,56**) during the casting is located with its upper end above the uppermost level of the form halves (**2,3,51,52**) and with its lower end either projects down into a hole (**31**) formed at the casting of an underlying wall portion (**30**) such a distance, that the upward transport of the beam system (**1,50**) is guided and its position relative to the underlying wall portion (**30**) is stabilized by means of said guide pipe (**13,56**), or at the absence of an underlying wall portion with its lower end is located substantially on the same level as the lowermost level of the form halves.

4,260,346

PRESS ASSEMBLY FOR POWDER MATERIAL

Raymond B. Anderson, Jr., 1838 N. Country La., Pasadena, Calif. 91107, and Aksel S. Jensen, 13635 Linfield Ave., Sylmar, Calif. 91345

Filed Oct. 9, 1979, Ser. No. 82,868
Int. Cl.[2] B30B *15/22, 11/02*
U.S. Cl. 425—78 **39 Claims**



1. An improved press assembly capable of forming parts from compactible powder with the use of an upper punch holder, a movable die holder assembly and a fixed lower punch assembly comprising,

a stationary support assembly;

an upper ram assembly relatively movable to the stationary support assembly having a first mounting means for an upper punch holder;

a lower ram assembly relatively movable to the stationary support assembly having a second mounting means for connection with a movable die holder assembly;

third mounting means on the stationary support assembly for connection with a fixed lower punch assembly;

first power means operatively connected to the upper ram assembly for exerting a compressive force in a vertical direction;

a push rod assembly mounted on the upper ram assembly having a pair of push rods hydraulically mounted for relative movement to the upper ram assembly, and

push rod control means respectively, positioning the push rods at a predetermined position relative to the upper punch holder for providing a prepress movement of the die holder, providing a positive mechanical stop during the final press compacting of the part and pushing the die

holder vertically downward relative to the fixed lower punch assembly during ejection of the formed part.

4,260,347

APPARATUS FOR PRODUCING SPACER FRAMES FOR INSULATING GLASS WINDOW STRUCTURES

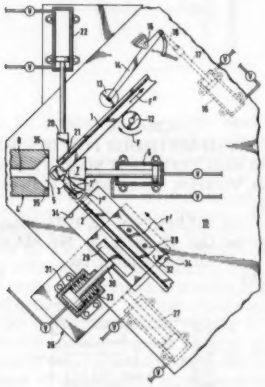
Rolf Sawatzki, Marl; Heinz-G. Gubelius, Essen; Joachim Heienbrock, Gladbeck; Friedrich Halberschmidt, Herzogenrath; Josef Audi, Aachen, and Norbert Schwarzenberg, Herzogenrath, all of Fed. Rep. of Germany, assignors to Saint-Gobain Vitrage, Neuilly-sur-Seine, France

Filed Mar. 25, 1980, Ser. No. 134,151

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1979, 2911831

Int. Cl.³ B29C *1/00*; B29F *1/00*

U.S. Cl. 425—123 **9 Claims**



1. An apparatus which is designed for producing spacer frames for insulating glass window structures, made up of hollow molding parts and inserted male cornerpieces joining the moldings together, the insides of the moldings at the frame corners being sealed by way of an injected sealing compound, and has an injection head having the form of the frame corners and a means for forcing a put-together frame corner against the injection head, characterized by:

a work table for the frame parts in the working position on injection of the sealing compound;

and by two gripper structures, designed for use in connection with the hollow molding parts forming a frame corner, at least one of said gripper structures being movable towards the inserted male cornerpiece after the hollow molding part has been gripped.

4,260,348

SPRUE BUSHING FOR INJECTION MOLDING MACHINE

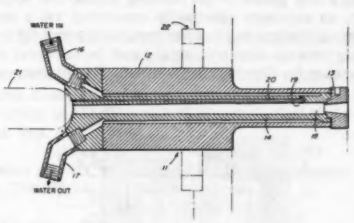
Theodore D. Graham, 5719 NE. 16th Ter., Coral Ridge Isles, Ft. Lauderdale, Fla. 33334

Continuation-in-part of Ser. No. 965,054, Nov. 30, 1978, abandoned. This application Oct. 12, 1979, Ser. No. 84,313

Int. Cl.³ B29G *3/00*

U.S. Cl. 425—144 **5 Claims**

1. A sprue bushing for use in place of the standard sprue bushing in injection molding machines utilizing thermo-setting plastic molding powders; said bushing comprising an elongated body (12) surrounding a core (14); said body (12) having a smooth inlet bore; said core having a central longitudinal passageway for molten plastic and having longitudinal grooves on its exterior surface; said grooves and inlet bore forming channels for passage of temperature-controlling liquid; means being provided to permit the flow of such liquid into and out of said channels; the diameter of the terminal portion of said bushing being slightly narrower than the mold cavity into which it is inserted so as to form an air gap between the bushing and the mold; a removable tip member being provided at the end of the bushing to form a sealed annular air pocket between the mold and the bushing.



4,260,349

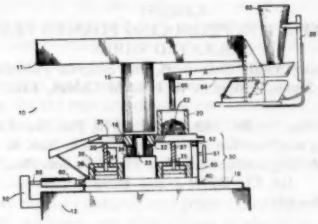
RECIPROCATING PELLET PRESS

Charles W. Jones, Seminole, Fla., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 7, 1980, Ser. No. 110,143

Int. Cl.³ B29H *5/24*

U.S. Cl. 425—150 **8 Claims**



1. In a pellet manufacturing apparatus including an upper platen, a lower platen, and means interconnecting said platens for moving at least one platen relative to the other between a wider spaced first position and a closer spaced second position, wherein the improvement comprises: a ram surface suspended from said upper platen; an upper plate, positioned between said ram surface and said lower platen, having an orifice extending between upper and lower surfaces thereof; punch means with portion projecting into said orifice for movement therein relative to said plate; a powder hopper having a bottom opening for dispensing powder; means for supporting said hopper adjacent said ram surface and against said upper surface of said plate; mounting structure attached to said plate; and reciprocating means attached to said lower platen for moving said mounting structure to position said punch means in pressing position beneath said ram surface and in powder receiving position beneath said hopper opening.

4,260,350

FILTER FOR HIGH VISCOSITY LIQUIDS

Luther O. Russell, Jr., Gastonia, N.C., assignor to Fiber Industries, Inc., New York, N.Y.

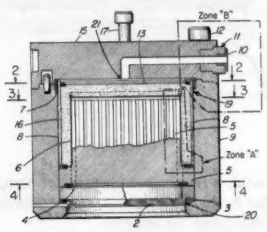
Continuation of Ser. No. 920,611, Jun. 29, 1978, abandoned. This application Apr. 16, 1980, Ser. No. 140,648

Int. Cl.³ B29F *3/06*

U.S. Cl. 425—197 **15 Claims**

1. An improved replaceable pack for filtering pressurized high viscosity molten polymer and extruding the filtered poly-

mer into shaped articles such as filaments and films, which pack comprises a housing having an inlet port and an outlet port, a lid having an inlet port and the lid being rigidly connected via a first gasket to the housing around the housing's inlet port, an extrusion die rigidly connected via a second gasket around the housing's outlet port, an internal lip within the housing between the extrusion die and the inlet port of the housing, means for filtering the fluid immediately upstream of



the lip, which filtering means comprises inert granular material immediately upstream of a supporting rimmed fine mesh screen whose annular rim contacts the housing's internal lip, wherein the improvement comprises:

said screen's rim is outwardly swaged and toggle jointed into said housing,

whereby there is a reduced chance of some of said fluid and said granular material by-passing said screen.

4,260,351

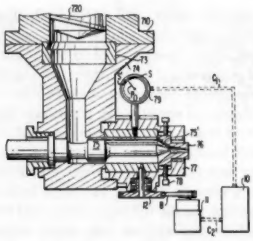
APPARATUS FOR PRODUCING FOAMED PLASTIC INSULATED WIRES

Hideo Takano; Yukio Shimohori, and Shigeho Fukuda, all of Hitachi, Japan, assignors to Hitachi Cables, Ltd., Tokyo, Japan

Division of Ser. No. 892,549, Apr. 3, 1978, Pat. No. 4,182,734, which is a continuation of Ser. No. 628,626, Nov. 4, 1975, abandoned. This application May 11, 1979, Ser. No. 38,148

Int. Cl.[3] **B29D** *27/00;* **B29F** *3/10*

U.S. Cl. 425—113 **4 Claims**



1. Apparatus for extrusion coating a resin onto a wire to form an insulated electrical cable, said resin containing a foaming agent and being received by said apparatus in an unfoamed state and extruded in a foamed state, said apparatus comprising:

a cross head, having a die forming an extrusion orifice through which said wire passes and at which said resin is extruded onto said wire, said crosshead further including a first passage **(3)** for receiving unfoamed resin and passing said resin to said extrusion orifice;

a second passage **(2)** for passing said unfoamed resin to said cross head;

a breaker plate **(1)** disposed between said mixing apparatus and said second passage for passing said unfoamed resin from said mixing apparatus to said second passage;

a nipple **(6)** positioned within said first passage to restrict the flow area cross section within said first passage, said nipple having a large diameter section **(61)** for defining a small cross sectional flow area **(31)** within said first passage and a smaller diameter section downstream of said large diameter section for defining a larger cross sectional flow area portion **(32)** within said first passage, said small cross sectional flow area portion restricting the flow of unfoamed molten resin, said resin experiencing a drop in pressure when travelling from said small cross sectional flow area to said larger cross sectional flow area to thereby separate said foaming agent from said resin and form bubble nuclei within said resin.

4,260,352

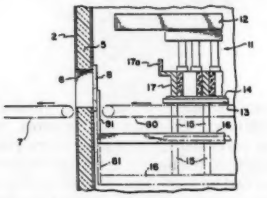
APPARATUS AND METHODS FOR DISCHARGING FLUENT MATERIAL TO BLOCK MAKING MACHINERY

Milo G. Balhorn, Waterloo, Iowa, assignor to Besser Company, Alpena, Mich.

Division of Ser. No. 855,941, Nov. 30, 1977, abandoned. This application Oct. 23, 1978, Ser. No. 954,486

Int. Cl.[3] **B28B** *1/08*

U.S. Cl. 425—211 **2 Claims**



1. In a concrete block making machine of the kind having an enclosure with side walls and a top wall comprising panels formed of sound insulating material; a mold enclosed, except at its top and bottom, supported within the enclosure for vibratory movement; a pallet supporting and block stripping assembly comprising: a pallet support supported for vertical movement within the enclosure for moving a pallet up into a position in engagement with the bottom of said mold, and a stripper head mounted for movement relative to the mold to cooperate with the pallet support in stripping a compressed block from the mold; a block discharge means mounted for movement to eject a pallet with a molded block thereon from below the mold, the block discharge means having a pallet conveying run extending from below the mold over to one side wall of the enclosure; a cementitious material feed member device, supported within the enclosure, mounted for movement from a charging position in which it receives material to a discharging position for charging material into the open upper end of the mold; a chute extending through said enclosure to supply material to said feed device; the said side wall confronting said conveying run having a block exit opening therein aligned with said conveying run; the improvement wherein a closure for said opening is disposed between the said confronting side wall and terminal end of the conveying run; and means links said closure with said assembly to be moved thereby, for moving said closure between positions in which it closes and opens said block exit opening.

4,260,353

APPARATUS FOR PRODUCING RECTANGULAR BLOCKS OF FOAMED RESINS

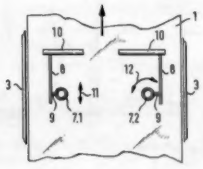
Dieter Buchert, Berkheim, and Karl-Heinz Stelzer, Memmingen, both of Fed. Rep. of Germany, assignors to Metzeler Schaum GmbH, Memmingen, Fed. Rep. of Germany

Filed Sep. 25, 1979, Ser. No. 78,689

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1978, 2841943

Int. Cl.³ B29D *27/04*

U.S. Cl. 425—224 **13 Claims**



1. Device for producing rectangular blocks of foamable reaction mixture according to a method which includes discharging the reaction mixture from a mixing chamber onto a forwardly moving surface path in a continuous mass of varying height and applying forces to the discharging mass opposing formation of differences in height thereof, comprising outlet means for discharging the reaction mixture from the mixing chamber onto the forwardly moving surface path, said outlet means being subdivided over a distance corresponding to the width of the blocks to be foamed, said outlet means comprising a plurality of outlets for the reaction mixture mutually spaced over the width of the blocks to be foamed, and a respective mechanically acting deflecting unit disposed perpendicularly to the direction of travel of said forwardly moving surface path in front of each of said plurality of outlets in foam direction, said deflecting unit being disposed relative to the respective outlet so as to deflect the mixture backwardly immediately after it is discharged from the respective outlet.

4,260,354

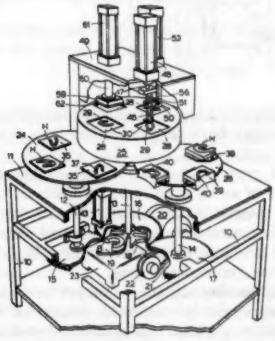
SPONGES FOR USE IN REMOVING SEAMS FROM CLAY HANDLES

Michael Gilman, Leek, and Robert M. Rushton, Stoke-on-Trent, both of England, assignors to Service (Engineers) Limited, Stoke-on-Trent, England

Filed Sep. 24, 1979, Ser. No. 78,450

Int. Cl.³ B29C *1/00*; B28B *11/18*

U.S. Cl. 425—227 **11 Claims**



1. A sponge for deseaming cup handles said sponge defining generally C-shaped or D-shaped passage therein conforming to the shape of a cup handle the outer surface of the sponge being treated all over to render it at least substantially impermeable to water.

4,260,355

DEVICE FOR THE DISCONTINUOUS PRODUCTION OF BLOCK FOAM

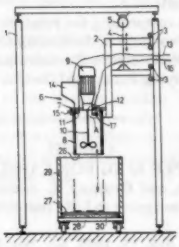
Lothar Röhrig, Hennef; Gottfried Bücher, Troisdorf-Spich, and Horst Klahre, St. Augustin, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Hennecke GmbH, Leverkusen, Fed. Rep. of Germany

Filed Jan. 2, 1980, Ser. No. 108,993

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1979, 2901176

Int. Cl.³ B29D *27/04*

U.S. Cl. 425—258 **7 Claims**



1. A device for the discontinuous production of block foam comprising a mixing unit with a means for moving said unit approximately vertically into and/or out of a mold and with said mixing unit comprising reaction component feed lines, a stirring means, and a mixing container having a plate with feed openings for the reaction components characterized in that

(A) a distributing device is arranged below a vertical opening for one of said components and the top of said distributing device is in substantially axial alignment with said vertical feed opening and

(B) said mixing container comprises a bottomless cylindrical shell, the lower rim of which can be placed on the bottom of said mold.

4,260,356

PLASTIC DISPENSING APPARATUS

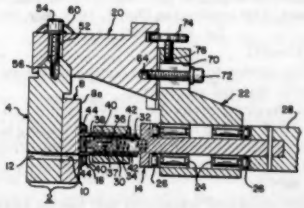
Tatsuo Fujiwara, Komaki; Masayasu Watanabe, Sendai; Mikio Yabumoyo, Inuyama; Takaaki Kanemori, Komaki, and Hiroshi Seo, Hatofukidai, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Mar. 5, 1980, Ser. No. 127,416

Claims priority, application Japan, Mar. 8, 1979, 54-26197

Int. Cl.³ B29C *17/14*

U.S. Cl. 425—311 **14 Claims**



1. The improvement in a plastic dispensing device for cutting and dispensing charges of plastic material extruded from an extrusion opening provided in a flat surface of an extrusion

block, said device including a rotatable shaft disposed substantially perpendicular to the surface of the extrusion block with its front end spaced from said surface in facing relation therewith, at least one cutting tool having at least one cutting blade interposed between the surface of the extrusion block and the front end of the shaft with the cutting blade disposed for movement across the extrusion opening in the flat surface of the extrusion block and a back surface of the cutting tool being engaged by the front end of the shaft, and spring means acting to hold the cutting tool resiliently against the flat surface, the improvement charcterized by:

(a) the cutting blade of the cutting tool having at least one cutting edge disposed in a flat plane;

(b) means for connecting the front end of the shaft to the back surface of the cutting tool for universal pivoting movement with respect thereto to hold the cutting edge of the cutting blade flat against the flat surface of the extrusion block; and

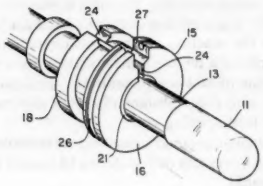
(c) drive means connecting the rotatable shaft to the cutting tool to effect rotation of the cutting tool and movement of the cutting blade across the extrusion opening with the cutting edge lying flat against the flat surface of the extrusion block.

4,260,357

STRIPPER RING FOR CAPSULE PINS

William G. Roast, and Geoffrey E. Adnams, both of Basingstoke, England, assignors to Lilly Industries Limited, London, England

Filed Feb. 15, 1980, Ser. No. 121,761
Int. Cl.³ B29C *1/00;* B29D *23/00*
U.S. Cl. 425—472 **5 Claims**



1. A ring having an inner diameter defining a bore for close sliding engagement with a capsule forming pin, said ring having a slot extending from said bore to the outer surface of said ring and from its leading and trailing faces, and a slotted annular insert of a durable hard material positioned at the leading face of said ring and forming the leading portion of said bore, said insert slot being aligned with said ring slot.

4,260,358

MOLDING DEVICE

Johannes Mehnert, Ernststrasse 11, 5205 St. Augustin 3, Menden, Fed. Rep. of Germany

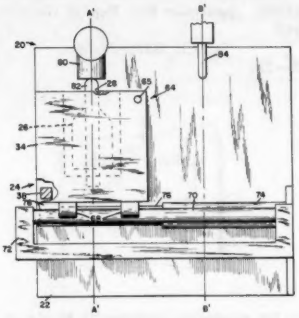
Continuation-in-part of Ser. No. 913,876, Jun. 8, 1978, abandoned. This application Oct. 1, 1979, Ser. No. 80,931
Int. Cl.³ B29C *17/07*
U.S. Cl. 425—532 **10 Claims**

1. Molding device for the manufacture of hollow articles of thermoplastic material comprising:

(a) a mold having a cavity for receiving a pre-cast of thermoplastic material and an upper opening leading to the cavity for receiving a blow pipe, said mold being divided within a vertical plane extending through the cavity to form two mold halves,

(b) a single elongated supporting spar having a central longitudinal axis transverse to said plane for fully supporting said mold below the cavity, said mold halves being mounted on said spar at a point below the cavity, at least one of said mold halves being slidingly mounted on said spar for movement along said axis between a closed position in which the mold halves are together and an open position in which the mold halves are separated, and

(c) locking means comprising a locking element on each mold half at a point above the bottom of the cavity and



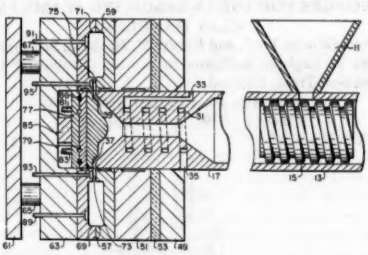
spaced from the cavity, said locking elements extending toward each other for locking engagement when the mold is in the closed position, said locking elements being separated sufficiently when the mold is in the open position to allow a pre-cast and an article produced by the mold to pass between the locking elements.

4,260,359

APPARATUS FOR RUNNERLESS INJECTION MOLDING THERMOSETTING MATERIALS

W. Andrew Dannels, Grand Island, N.Y., and Robert W. Bainbridge, Gainesville, Ga., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Dec. 21, 1978, Ser. No. 972,181
Int. Cl.³ B29F *1/03, 1/05, 1/08*
U.S. Cl. 425—543 **10 Claims**



1. An improved injection nozzle comprising:

(a) a unitary housing member having a closed end and an open end,

(b) said open end adapted to be attached to the injection barrel of an injection molding machine,

(c) the interior of said closed end and the interior of said housing member forming an internal chamber,

(d) said internal chamber narrowing along a portion thereof to form a constricted zone,

(e) said housing member adjacent said constricted zone having operably connected means for maintaining the temperature within said constricted zone sufficiently cool to prevent any substantial curing of feed material and sufficiently warm to maintain feed material in a plasticized condition,

(f) said housing member having a plurality of feed outlets

positioned along the periphery thereof contiguous to said closed end,

(g) said feed outlets connecting with said internal chamber; and

(h) said housing having in combination, in contact with the closed end thereof, a temperature controlled plate that assists in controlling the temperature of the closed end of said nozzle.

2. An improved injection molding machine comprising:

a stationary assembly comprised of:

a stationary platen member,

a heat plate mounted thereon, means to heat said plate, and

a plurality of mold faces mounted on said heat plate;

a movable assembly comprised of:

a movable platen member,

a heat plate mounted thereon, means for heating said plate, and

a plurality of mold faces mounted on said heat plate corresponding to and adapted to be aligned with the mold faces on said stationary assembly to form a plurality of mold cavities;

an injection nozzle assembly comprised of:

a housing member having a closed end and an open end, said open end adapted to be attached to the injection barrel of an injection molding machine,

said closed end and interior of said housing member forming an internal chamber,

said internal chamber narrowing along a portion thereof to form a constricted zone,

said housing member adjacent said constricted zone having operably connected means for maintaining the temperature within said constricted zone sufficiently cool to prevent any substantial curing of feed material and sufficiently warm to maintain feed material in a plasticized condition,

said housing member having a plurality of feed outlets positioned along the periphery thereof contiguous to said closed end, and

said feed outlets connecting with said internal chamber,

means to move said movable assembly to bring said aligned mold faces into contact with corresponding mold faces in said stationary assembly to form mold cavities and runner channels adapted to feed said mold cavities, whereby said injection nozzle assembly is positioned with respect to said stationary assembly and said movable assembly such that said feed outlets are maintained in open communication with said runner channels,

means for feeding a supply of plasticized thermosetting molding material into the open end of said nozzle member, through said feed outlets, then through said runner channels and into said mold cavities, and curing said thermosetting feed material enclosed within the mold cavities, and

means for retracting said movable assembly to separate said mold faces and remove a molded article.

4,260,360

METHOD AND MEANS FOR REPLICATING CENTRALLY APERTURED VIDEO DISC RECORDS

John R. Holmes, Garden Grove, and Roy G. Jordan, El Toro, both of Calif., assignors to MCA Disco-Vision, Inc., Universal City, Calif.

Division of Ser. No. 847,367, Oct. 31, 1977. This application Jun. 26, 1978, Ser. No. 918,895

Int. Cl.[3] **B29D** *17/00;* **B29F** *1/08*

U.S. Cl. 425—548 **5 Claims**

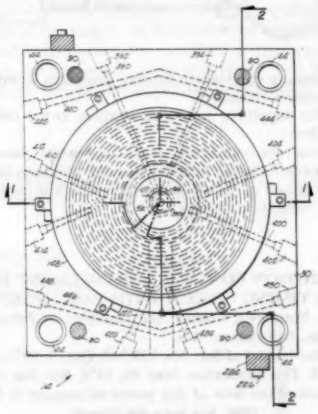
1. A cooling system for use in an injection molding apparatus of a type having first and second mold halves reciprocally movable between a closed position, wherein a thin annular molding cavity for receiving a molten material is formed therebetween, and an open position, wherein a molded part can be removed from the molding cavity, each of said mold halves including a molding member having a first surface and a second surface, said first surface forming one side of the molding cavity, said injection molding apparatus further including a sprue bushing positioned adjacent the center of the molding cavity, said bushing having an outer surface and means defining a central opening through which the molten material is injected into the molding cavity, said cooling system comprising:

means defining a plurality of concentrically-arranged, spiral-shaped channels in the second surface of the molding member of each of said first and second mold halves, each of said channels having an inlet and an outlet and each of said channels forming more than a single revolution in its corresponding molding member, whereby each channel forms a substantially ring-shaped cooling zone;

means defining a helical channel in the outer surface of said sprue bushing, said helical channel having an inlet and an outlet and forming more than a single revolution in the outer surface;

means defining a transverse cooling channel in each of said first and second mold halves, each of said transverse channels having an inlet and an outlet and being located radially outwardly of the annular molding cavity;

inlet means in registration with the inlet of each of the channels, for conveying a cooling fluid to the channels, to cool said first and second mold halves and said sprue bushing in a prescribed fashion; and



outlet means in registration with the outlet of each of the channels, for carrying away the cooling fluid after it has been conveyed therethrough.

5. A cooling system for use in an injection molding apparatus of a type having first and second mold halves reciprocally movable between a closed position, wherein a thin annular molding cavity for receiving a molten material is formed therebetween, and an open position, wherein a molded part can be removed from the molding cavity, each of said mold halves including a molding member having a first surface and a second surface, said first surface forming one side of the molding cavity, said cooling system comprising:

means defining a cooling channel in the second surface of the molding member of each of said first and second mold halves, each of said channels having an inlet and an outlet;

inlet means in registration with the inlet of each of the channels, for conveying a cooling fluid to the channels, to cool said first and second mold halves in a prescribed fashion;

outlet means in registration with the outlet of each of the channels, for carrying away the cooling fluid after it has been conveyed therethrough; and

means defining a transverse cooling channel in each of said first and second mold halves, each of said transverse chan-

nels having an inlet and an outlet and being located radially outwardly of the annular molding cavity;

wherein said inlet means and said outlet means are in registration with the inlet and outlet, respectively, of each transverse channel, and further function to convey a cooling fluid through the transverse channels to regulate the temperature of prescribed portions of the mold halves in a prescribed fashion, thereby minimizing the transfer of heat radially outwardly from the molding cavity.

4,260,361
RESONANT OR PULSATING COMBUSTION HEATING APPARATUS

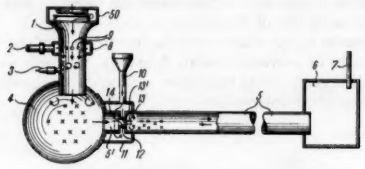
Ludwig Huber, Saarland St. 15, 7000 Stuttgart 80, Fed. Rep. of Germany

Filed Dec. 15, 1978, Ser. No. 969,905

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1978, 2844095

Int. Cl.³ F23C *11/04*

U.S. Cl. 431—1 **7 Claims**



1. A pulsating combustion heating apparatus, comprising:

a combustion chamber;

means for supplying a fuel/air mixture to the combustion chamber;

a pulsation tube connected to said combustion chamber; and

means for introducing fresh air into said pulsation tube at the forward end of the pulsating tube which is connected to said combustion chamber.

4,260,362
FUEL IGNITION CONTROL ARRANGEMENT HAVING A TIMING CIRCUIT WITH FAST RESET

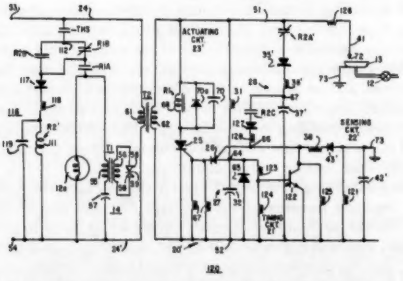
Russell B. Matthews, Goshen, Ind., assignor to Johnson Controls, Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 839,743, Oct. 5, 1977, Pat. No. 4,168,947. This application May 30, 1978, Ser. No. 910,682

The portion of the term of this patent subsequent to Sep. 25, 1996, has been disclaimed.

Int. Cl.³ F23N *5/00*

U.S. Cl. 431—69 **8 Claims**



1. In a fuel ignition system including a fuel supply valve having an operate solenoid, said fuel supply valve being operable to supply fuel to a burner apparatus, and spark generating means for providing sparks for igniting fuel emanating from the burner apparatus, a control arrangement comprising: input means connectable to a source of power for energizing said control arrangement; actuating means operable when enabled to connect said operate solenoid to said input means for energization to operate said fuel supply valve; control means including first switching means for controlling the operation of said actuating means, and ignitiion timing means including a timing network having a capacitor, second switching means normally connecting said timing means to a source of power to permit said capacitor to be charged, said second switching means being operable to cause said capacitor to discharge to generate a timing signal during a trial for ignition interval defined by the discharge time of said capacitor, first signal coupling means responsive to said timing signal for coupling said timing means to a control input of said first switching means to permit said timing signal to be extended to said control input thereby enabling said first switching means to cause said actuating means to be enabled during said trial for ignition interval, and to cause said actuating means to be disabled at the end of said trial for ignition interval; and flame sensing means for generating a control signal when a flame is provided at said burner apparatus; said control means further including second signal coupling means for coupling for said flame sensing means to said control input of said first switching means to permit said control signal to be extended to said control input for enabling said first switching means to continue to cause said actuating means to be enabled after said trial for ignition interval, and said second signal coupling means decoupling said flame sensing means from said control input of said first switching means and said timing means in the absence of said control signal, and said first signal coupling means being responsive to said control signal to decouple said timing means from said control input of said first switching means and said flame sensing means.

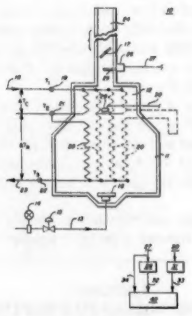
4,260,363
FURNACE FUEL OPTIMIZER

John R. Cratin, Jr., Texas City, Tex., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Mar. 5, 1979, Ser. No. 17,390

Int. Cl.³ F23N *5/00*

U.S. Cl. 431—76 **5 Claims**



1. A furnace for heating a fluid having a radiant section, a convective section, and at least one fluid heating coil extending through said sections adapted to conduct said fluid initially through said convective section and finally through said radiant section, and means for optimizing the consumption of fuel in said furnace, said optimizer means comprising:

(a) temperature sensing means associated with said fluid heating coil for sensing the temperatures at the inlet of the convective section, the outlet of the convective section, and the outlet of the radiant section;

(b) a combustion air controller for regulating the flow of air to said furnace;

(c) ratio computing means responsive to the temperatures sensed by said temperature sensing means for computing

the ratio of the temperature differential across said radiant section of said fluid heating coil to the temperature differential across said convective section of said fluid heating coil; and

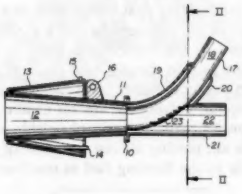
(d) means for transmitting the outputs from said temperature sensing means to said computing means and from said computing means to said combustion air controller, whereby said combustion air controller may be operated in response to said computed ratio of the temperature differentials of the radiant and convective sections of said fluid heating coil to maximize radiant section heat transfer.

4,260,364

BURNER FOR FLASH SMELTING FURNACE

Charles E. Young, Copper Cliff, and Charles D. Dobson, Sudbury, both of Canada, assignors to The International Nickel Company Inc., New York, N.Y.

Filed Apr. 17, 1979, Ser. No. 30,774
Claims priority, application Canada, Apr. 17, 1978, 301221
Int. Cl.³ F23D *11/36*
U.S. Cl. 431—160 **5 Claims**



1. A burner adapted to be inserted in a side wall of a flash smelting furnace comprising:

means for defining a first passage through which in operation particulate solids flow towards said furnace comprising a tubular member having a bend therein, said tubular member being provided within the bent region thereof with at least one aperture in the tube wall remote from the center of curvature of said bend; and

means for defining a second passage through which in operation oxidant gas flows toward said furnace including a housing surrounding said tubular member at least over a portion of the length of said tubular member which portion includes said bend; and

means for defining a mixing tunnel into which in operation solids and gas are fed from said first and second passages, and from which in operation solids-gas mixture is discharged into said furnace; and

wherein said mixing tunnel-defining means comprises a frusto-conical member having its narrower extremity disposed towards and in fixed abuttment with said housing, and

wherein said mixing tunnel-defining means is provided with an outer jacket and means for circulating cooling fluid within the space between said frusto-conical member of said jacket.

4,260,365

CANDLE LAMP

Marvin L. Kayne, Glenwood, Ill., assignor to Valley Candle Mfg. Co., Inc., Brooklyn, N.Y.

Filed Mar. 30, 1978, Ser. No. 891,634
Int. Cl.³ F23D *3/16*
U.S. Cl. 431—291 **13 Claims**

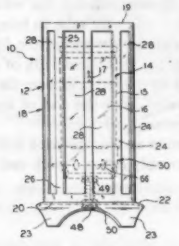
1. A candle and holder comprising:

a container means for containing a burning substance such as wax or the like;

a flexible socket means for receiving said container means, said socket including a bottom end and a circular side wall;

at least one groove formed in one of said means;

at least one tongue protruding from the other of said means, said groove and tongue cooperating to permit said container to be lifted into and out from said socket but preventing twisting motion of said container inside said socket;



a plurality of spaced apart fingers extending inward from the side wall for contacting and spacing the container from the sidewall of the socket; and

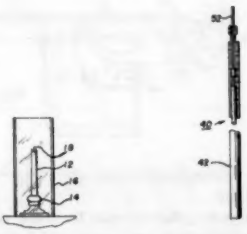
a plurality of ledges spaced apart and extending inward from the side wall of the socket and positioned upward from the bottom of the socket, the bottom of the container resting on said ledges when the container is positioned in the socket, the spacing between said fingers and ledges enabling air circulation around the lower end of the container.

4,260,366

SELECTIVELY ACTUATABLE CANDLE IGNITER

Raymond Karlyk, 911 Cedar St., Boonton, N.J. 07005

Filed Sep. 5, 1979, Ser. No. 72,571
Int. Cl.³ F23D *3/02*
U.S. Cl. 431—298 **10 Claims**



1. A selectively actuatable wick lighting apparatus which is adapted to be manipulated so as to provide an extended wick end which may be lighted and when lighted provides a long slender wick igniter which may be extended into an open top of an enclosure device to light a "hard to reach" wick, said apparatus including:

(a) an outer tube of noncombustionable material and of slender configuration and having a relatively thin wall;

(b) at least one notch formed in said side wall of the outer tube and close to one end of the tube, this notch extending inwardly from the outer surface to form a substantially reduced longitudinal cross section area and providing therewith a heat sink area and means;

(c) a forward grasping portion provided by the outer tube and extending at least a distance of at least four inches from the heat sink end of the outer tube;

(d) a wick holder sized so as to be slidable within the outer

tube and having a wick end member removably secured in said holder, this holder having a body portion of a length sufficiently greater than this forward grasping means so that this body portion of the wick holder may be engaged by the user to manipulate the holder to bring the retained wick end outwardly to an exposed condition whereupon this wick end may be lighted and this lighted wick may be manipulated into the enclosure to light the wick of the candle after which the lighted wick is removed from the enclosure and by manipulation the wick holder is moved sufficiently into said outer tube to bring the lighted wick into the heat sink area whereat the lighted wick end is extinguished by the close proximity of said tube, this heat sink preventing unwanted heat from the now extinguished wick end to travel from the end of the outer tube to its grasped midportion, and

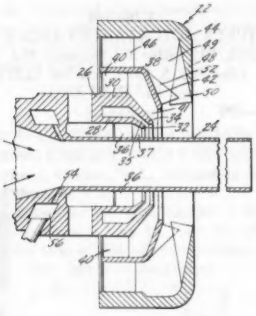
(e) a chuck carried in and by the wick holder and adapted to grasp and removably retain a wick end portion in the end of said holder.

4,260,367

FUEL NOZZLE FOR BURNER CONSTRUCTION

Stanley J. Markowski, East Hartford, and Robert P. Lohmann, South Windsor, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 11, 1978, Ser. No. 968,654
Int. Cl.³ F23D *15/02*
U.S. Cl. 431—353 **13 Claims**



1. A burner construction including:

an inlet end cap;

sidewalls extending downstream from the cap to define a primary combustion zone, said walls converging in a downstream direction at a point spaced from the cap to define a throat and diverging again downstream of the throat to define a secondary combustion zone;

an annular primary nozzle in the end cap for directing air and fuel at a large angle relative to the axis of the burner into the primary zone adjacent to the cap, said nozzle including an annular discharge fuel path and a surrounding ring having an inturned end flange and forming an annular air path;

a secondary nozzle within the annular nozzle for directing fuel and air at a small angle and substantially parallel to the burner axis, this small angle and the spacing of the throat from the cap being such that substantially all the fuel passes through the throat; and

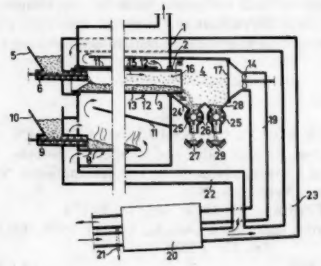
vortex generating vanes positioned on the flange on said ring to create vortices in the air in said air path.

4,260,368

PROCESS AND A DEVICE FOR TREATMENT OF BIOLOGIC FUELS

Einar L. Karlsson, Abyn 1203, Burträsk, Sweden (S-930 20)

Filed Jun. 7, 1979, Ser. No. 46,321
Claims priority, application Sweden, Jun. 9, 1978, 7806720
Int. Cl.³ F27B *14/00, 6/08*
U.S. Cl. 432—1 **14 Claims**



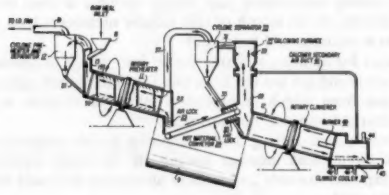
1. A process for treating peat comprising: burning a fuel to produce a stream of hot combustion gases; drying the peat by passing the stream of hot combustion gases in indirect heat exchange with the peat to thereby heat the peat to a temperature sufficient to vaporize water from the peat and to form a stream of hot vapour; passing the stream of hot vapor in heat exchange relationship with a stream of outside air to heat the stream of outside air; passing at least a portion of the stream of heated outside air to the burning fuel as combustion air.

4,260,369

METHOD OF CONVERTING A ROTARY KILN CEMENT MAKING PLANT TO A CALCINING FURNACE CEMENT MAKING PLANT

Jay Warshawsky, Allentown, Pa., assignor to Fuller Company, Bethlehem, Pa.

Filed Nov. 19, 1979, Ser. No. 95,262
Int. Cl.³ F27D *1/16*
U.S. Cl. 432—3 **6 Claims**



1. A method for converting a long dry or wet process cement plant which includes an existing rotary kiln in which preheating, calcining and clinkering operations are carried out into a dry process cement making plant which includes a rotary preheater, stationary suspension calcining furnace and rotary clinkering kiln comprising the steps of:

cutting said existing rotary kiln and removing a central section thereof to provide a rotary preheater having a material inlet and outlet and a counter flowing hot gas inlet and outlet and a rotary clinkering kiln including a burner and having a material inlet and outlet and a counter flowing hot gas inlet and outlet;

connecting a stationary suspension calcining furnace having a burner to said rotary preheater and rotary clinkering kiln by coupling a hot gas inlet of said stationary suspension calcining furnace to the hot gas outlet of said rotary clin-

kering kiln and a material inlet of said stationary suspension calcining furnace to the material outlet of said rotary preheater; and

connecting a gas-solid separator to said rotary preheater, said stationary suspension calcining furnace, and rotary clinkering kiln by coupling a hot gas and material inlet of said gas-solid separator to a hot gas and material outlet of said stationary suspension calcining furnace, a material outlet of said gas-solid separator to the material inlet of said rotary clinkering kiln, and a hot gas outlet of said gas-solid separator to the hot gas inlet of said rotary preheater.

4,260,370

PROCESS FOR THE HEAT-TREATMENT OF FINE GRAINED MATERIAL

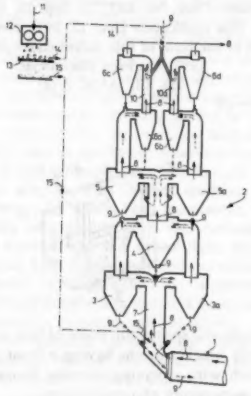
Wolf Goldmann, Beckum, and Wolfgang Rother, Stromberg, both of Fed. Rep. of Germany, assignors to Krupp Polysius AG, Fed. Rep. of Germany

Filed Nov. 13, 1979, Ser. No. 93,700

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1978, 2852754

Int. Cl.³ F27B *15/00;* F26B *9/12*

U.S. Cl. 432—14 **7 Claims**



1. In a process of heat treating fine-grained material such as cement wherein said material passes successively through stages of a vertical, multi-stage cyclone preheater and thence into a kiln from which hot gases flow through said preheater and preheat such material, and wherein additional solid fuel is combusted in the presence of said material, the improvement comprising separating said solid fuel into relatively fine and relatively coarse particles; introducing the relatively fine particles into said preheater at a first selected cyclone stage thereof relatively near said kiln; and introducing the relatively coarse particles into said preheater at a second selected cyclone stage relatively remote from said kiln, said first and second stages being selected with reference to the respective particle size, reactivity, moisture content, and incombustible constituency of said fuel so that the combustion of said relatively coarse and relatively fine particles is substantially complete in the lowermost cyclone stage of said preheater.

4,260,371

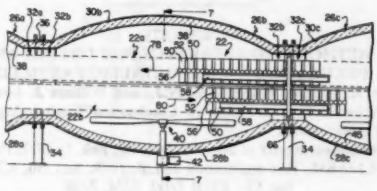
MODULAR HEAT EXCHANGE APPARATUS

Joseph M. O'ffill, Shawnee Mission, Kans., assignor to Shale Oil Science & Systems, Inc., Kansas City, Mo.

Filed Jul. 20, 1979, Ser. No. 59,230

Int. Cl.³ F27D *13/00, 15/02*

U.S. Cl. 432—82 **9 Claims**



1. Heat exchange apparatus, comprising:

means for supporting a relatively cold first material to be heated;

structure for supporting a relatively hot second material adjacent said cold material; and

an elongated, tunnel-like heat exchanger disposed about and receiving said means and said structure for permitting heat exchange between said first and second materials,

said heat exchanger including a plurality of zones along the length thereof,

each of said zones being defined by walls which present an inlet and an outlet, and a central heat exchanger region between said inlet and said outlet,

the maximum cross-sectional area of said central region being substantially larger than the cross-sectional areas of said inlet and said outlet, for defining, along the length of spaced, restricted throats serving to said heat exchanger, a plurality of dampen chimney-like drafts along the length of said heat exchanger.

4,260,372

ROTARY TUBE

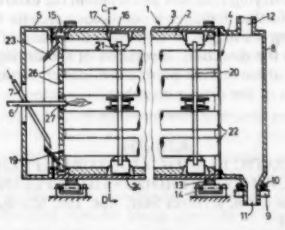
Wolfgang Keller, Bergisch-Gladbach, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 132,947

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1979, 2914965

Int. Cl.³ F27B *7/00*

U.S. Cl. 432—103 **5 Claims**



1. A rotary heating tube comprising: a rotatable outer casing; at least one treatment tube extending longitudinally in the casing spaced apart from the internal surface of the casing; and means supporting the at least one treatment tube in the casing in the spaced apart location comprising

a. support plates disposed within the casing each in a plane perpendicular to the longitudinal axis of the casing and through which the at least one treatment tube passes, the support plates including one end plate to which the at least one treatment tube is fixedly connected,

b. first means mounting the one end plate for free rotational movement in the casing with sufficient clearance in the radial direction to allow for radial thermal expansion and substantially no clearance in the axial direction and

c. second means mounting the remaining support plates for free sliding movement in the axial direction with sufficient clearance in the radial and angular directions to allow for thermal expansion.

4,260,373

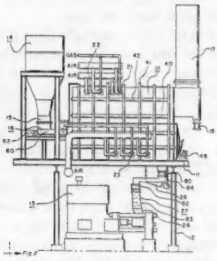
METHOD AND APPARATUS FOR DRYING AND PREHEATING SMALL METALLIC PARTICLES

John R. Fellnor, Willingboro, N.J., and William J. Love, Jr., Perkasie, Pa., assignors to Combustion Engineering, Inc., Windsor, Conn.

Continuation-in-part of Ser. No. 766,489, Feb. 7, 1977, Pat. No. 4,133,635. This application Jan. 8, 1979, Ser. No. 1,745

Int. Cl.[3] **F27B** *7/00, 7/14, 7/38*

U.S. Cl. 432—110 **9 Claims**



1. In apparatus for drying and preheating small metallic particles to remove volatiles therefrom of the type having an internally heated drying chamber and conveyor means within the drying chamber for conveying the particles through the drying chamber, the improvements in the conveyor means comprising: a drying drum opened at both ends positioned within the drying chamber and adapted to receive and convey internally through the drying drum the particles to be dried; drum support means supporting the drying drum for axial rotation within the drying chamber; the lower inner portion of the drying chamber being of a configuration complementary to the exterior configuration of the drying drum and wherein the drying drum is supported in close proximity to the lower portion of the drying chamber and wherein the exterior surface of the drum further includes a continuous arcuate flight substantially along the length of the drying drum and of a positive lead angle to the direction of rotation of the drying drum to continuously remove fine particulate matter settling to the lower portion of the drying chamber.

4,260,374

ORTHODONTIC ELASTIC LIGATURE APPLICATOR FOR LINGUAL ORTHODONTIC APPLIANCES

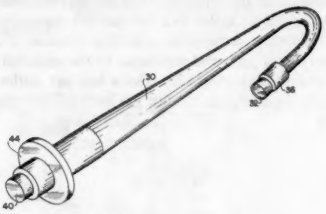
Craven H. Kurz, No. 6 North Star, Apt. 106, Marina del Rey, Calif. 90291

Filed Feb. 11, 1980, Ser. No. 120,157

Int. Cl.[3] **A61C** *3/00, 7/00*

U.S. Cl. 433—3 **3 Claims**

1. A hand tool for an orthodontist to permit the orthodontist to mount stretched annular elastic ligatures onto orthodontic arch wire support brackets affixed to the lingual side of the teeth of a patient, said hand tool comprising: an elongated tubular housing having a U-shape so that the forward end of the housing may be placed against the lingual surface of a tooth when the housing is inserted into the mouth of a patient; a support member positioned on the forward end of the housing for supporting an annular elastic ligature in a stretched condition about its periphery; an ejector member mounted on said support member in coaxial relationship therewith and reciprocally slidable on said support member; a pushbutton mounted



on the rear end of said housing; a push rod coupling the pushbutton to the ejector member so that when the pushbutton is depressed, the ejector member moves forward on said support member to eject the annular elastic ligature; and spring means biasing said ejector member and said pushbutton towards the rear of said housing.

4,260,375

BENT WIRE ORTHODONTIC SPRING CLIP

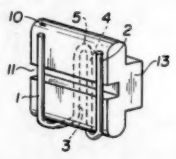
Melvin Wallshein, 8645 Bay Pkwy., Brooklyn, N.Y. 11214

Continuation of Ser. No. 837,725, Sep. 29, 1977, Pat. No. 4,197,642. This application Dec. 13, 1979, Ser. No. 103,229

The portion of the term of this patent subsequent to Apr. 15, 1997, has been disclaimed.

Int. Cl.[3] **A61C** *7/00*

U.S. Cl. 433—11 **116 Claims**



1. An orthodontic spring clip made of bent wire for use with an orthodontic bracket means having a front portion with an elongated arch wire receiving opening formed in said front portion, the wire spring clip comprising:

a first resilient wire portion comprising at least two spaced apart elongated members for engaging and passing over at least a part of said front portion of the bracket having said arch wire receiving opening therein, and for passing over at least a portion of said arch wire receiving opening to resiliently retain an arch wire relative to said bracket, said at least two elongated members being spaced apart a distance so as to pass over a part of said front portion of the bracket and over at least a portion of said arch wire receiving opening intermediate the ends of said elongated arch wire receiving opening;

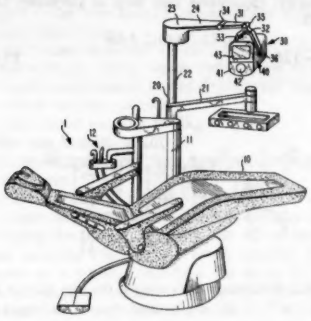
a second wire portion comprised of at least two elongated members coupled to said first wire portion of said clip for engaging said bracket when said first wire portion of said clip at least partially covers said arch wire receiving opening of the bracket; and

means coupling together the elongated members of at least one of said first and second clip portions.

4,260,376
DENTAL APPARATUS

James G. Litel, Box 236, and George R. Hefner, P.O. Box 218, both of Coleridge, Nebr. 68727

Filed Aug. 29, 1979, Ser. No. 70,542
Int. Cl.[3] A61C *3/00*
U.S. Cl. 433—29 1 Claim



1. An improved dental apparatus to be used to educate, entertain and relax a patient during normal dental procedures comprising:

a pivoted articulated dental light support structure with at least two pivoted sections connected together for relative rotations, one of which pivoted sections comprises a pivotally connected bifurcated support element;

a dental light with operative electrical wiring, and a lens supported in a framework having a horizontal support member and secured to said support structure;

a television type cathode ray tube audio-visual member with operative wiring mounted on top of said dental light, operatively connected to a remote housing which contains the cathode ray tube circuitry, with a recording camera operatively connected to the cathode ray tube circuitry, said audio-visual member mounted on said dental light framework by both an apertured mounting flange secured to the ends of said bifurcated support element, and a pair of apertured support arms further securing the audio-visual member to the dental light framework;

a single housing surrounding both said cathode ray tube audio-visual member and said dental light, located external said dental light framework and between the bifurcated members of said bifurcated support elements, wherein said dental light lens and said audio-visual member are mounted in the same vertical plane;

a vertical column means for securing said articulated dental light support structure, said vertical column means affixed to one of said pivoted sections; and

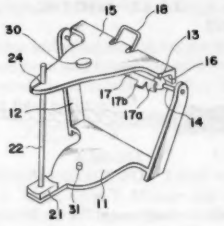
an umbilical cord means for enclosing said dental light operative electrical wiring and said cathode ray tube operative wiring within a single cord hidden from view within said vertical column.

4,260,377
DENTAL ARTICULATOR

Sumiya Hobo, Tokyo, and Nobuhiro Shioda, Tochigi, both of Japan, assignors to Shioda Dental Manufacturing Co., Ltd., Nasu, Japan

Filed Apr. 19, 1979, Ser. No. 31,396
Claims priority, application Japan, Apr. 22, 1978, 53-53963[U]
Int. Cl.[3] A61C *11/00*
U.S. Cl. 433—58 3 Claims

1. A ball and box type Arcon dental articulator comprising a lower jaw member provided with a spaced pair of arms extending upwardly from its posterior laterals, an upper jaw member provided with a spaced pair of glenoid cavities at its posterior laterals, a pair of condylar shafts mounted on the free ends of said arms in horizontal and inward directions, a pair of condylar elements respectively mounted on said condylar shafts, and a spring means fixed to said upper jaw member at its central portion, anterior walls of said glenoid cavities, being

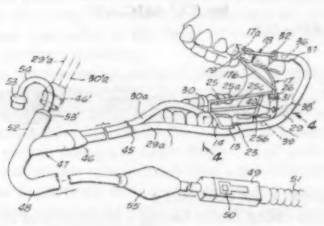


formed by the free ends of said spring means, each of said condylar elements being held in the glenoid cavities to articulate said upper and lower jaw members under the pressure of said spring means, thereby permitting the upper and lower jaw members to be opened and closed, yet return to the same position each time.

4,260,378
SELF STABILIZING INTRA-ORAL SALIVA EVACUATOR

Robert J. O'Neil, 2995 McGill St., Vancouver, B.C., Canada (V5K 1H8)

Filed Jun. 1, 1979, Ser. No. 44,470
Int. Cl.[3] A61C *17/04*
U.S. Cl. 433—93 23 Claims



1. A self-stabilizing intra-oral evacuator for evacuating saliva from aligned sets of upper and lower molars and for passing air thereover to maintain the same dry while undergoing treatment or dental work comprising:

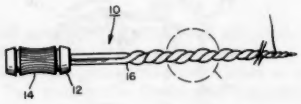
a pair of spaced-apart semi-resilient U-shaped metallic members, the free ends of the legs of said pair of metallic members being interconnected by metallic bridging portions adapted to rest astride a non-tissue portion of a respective one of the mandibular and maxillary arches in a self-stabilizing manner along one side of the oral cavity and which bridging members cooperate with said semi-resilient U-shaped members in holding said arches open and against closing by the patient so long as installed; and

flexible tubing loosely assembled over a major portion of said U-shaped metallic members, said tubing having a series of saliva and air inlet openings disposed, in part, adjacent the root ends and, in part, adjacent the crowns of juxtaposed ones of said molars and adapted to be connected to evacuating means while said appliance is installed in an oral cavity.

4,260,379
ENDODONTIC INSTRUMENT

William A. Groves, Ann Arbor, and Frank N. Lentine, Taylor, both of Mich., assignors to Sybron Corporation, Rochester, N.Y.

Filed May 17, 1979, Ser. No. 39,927
Int. Cl.[3] A61C 5/02
U.S. Cl. 433—102 13 Claims



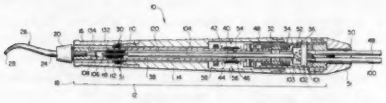
1. In an Endodontic Instrument for use in root canal preparation including an axially tapered flexible rod for insertion into the root canal, said rod having spiral faces defining spiral edges between them and a handle portion fixed to the rod for manipulating the endodontic Instrument, the improvement comprising:

said rod having a tetragonal cross section, the sides of which are substantially flat and define at least one obtuse angle and one acute angle, the spiral edge corresponding to each acute angle being a cutting edge.

4,260,380
VIBRATORY DEVICE WITH FLUID TRANSPORT MEANS

John E. Nash, Downingtown, Pa., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Apr. 2, 1979, Ser. No. 26,378
Int. Cl.[3] A61C 3/03
U.S. Cl. 433—119 28 Claims



1. A dental scaler comprising:

elongated casing means having a proximal end and a distal end;

resilient support means within said casing means;

a substantially rigid hollow shaft supported within said elongated casing means by said resilient support means;

work tool connecting means attached to the distal end of said hollow shaft, said work tool connecting means capable of operatively connecting a work tool to the distal end of said hollow shaft;

means for imparting vibration to said resiliently supported hollow shaft when said dental scaler is energized to provide vibratory movement to a work tool connected to said work tool connecting means;

water transport means comprising a tube disposed substantially coaxially within said hollow shaft, said tube having a proximal end and a distal end;

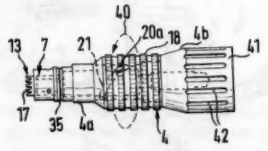
a water seal assembly for supporting the distal end of said water transport tube within said hollow shaft;

said dental scaler characterized by having a vibrational node near the distal end of said hollow shaft with said water seal assembly being disposed distally of the vibrational node and being retained in a sealing arrangement with said hollow shaft without supplemental retaining means.

4,260,381
DENTAL HANDPIECE

Eugen Eibofner, Biberach, and Ernst Strohmaier, Bad Schussenried, both of Fed. Rep. of Germany, assignors to Kaltenbach & Voight GmbH & Co., Biberach an der Riss, Fed. Rep. of Germany

Filed Dec. 11, 1979, Ser. No. 102,355
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1978, 2855359
Int. Cl.[3] A61C 3/06
U.S. Cl. 433—126 17 Claims

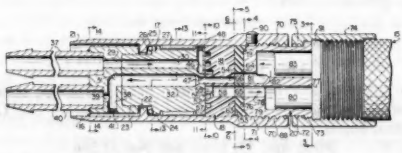


1. In a dental handpiece including a driving sleeve having driving means; a base sleeve; a head sleeve having a dental work tool attachable thereto, at least said base sleeve and head sleeve being detachably interconnected to facilitate exchange of said head sleeve; a shaft supported in said base sleeve and rotatably connected with said driving means; and rotation-transmitting means on said shaft engageable with a shaft member supported in said head sleeve; the improvement comprising: said rotation-transmitting means consisting of first and second rotation-transmitting components of which one is presently utilized in the application of one of two differently constructed types of head sleeves, said first rotation-transmitting component, at a shaft component arranged interiorly of the first type of head sleeve and having a complementary engaging means at the drive-sided end, being constituted of an engaging means on the power takeoff end of the shaft in said base sleeve and adapted for engagement in said engaging means; and said second rotation-transmitting component, at a shaft component having a blunt-shaped drive-sided end arranged interiorly of the second type of head sleeve, being constituted of a gripping arrangement open towards the power takeoff end and actuatable by an external shifting element for gripping the blunt-shaped shaft component end.

4,260,382
AIR TURBINE DENTAL HANDPIECES AND SWIVEL CONNECTIONS THEREFOR

Loronzo H. Thomson, c/o Numerical Engineering Machine Company, P.O. Box 10248, Wilson Airport, Macon, Ga. 31201

Filed Jan. 23, 1980, Ser. No. 114,338
Int. Cl.[3] A61C 1/08
U.S. Cl. 433—126 38 Claims



1. For a dentist's installation of the type comprising a handpiece equipped with a turbine for driving a dental tool, a first flexible conduit for supplying pressure fluid to drive the turbine, a second flexible conduit for conducting exhaust fluid from the turbine, and at least a third flexible conduit for supplying cooling water to the tooth upon which work is being performed, the improvement comprising, in combination

tubular casing means to be carried by the handpiece;

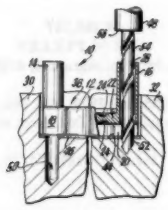
a first swivel member having
a front face, and
first, second and third flow passages opening through the front face;
bearing means operatively disposed between the casing means and the first swivel member and supporting the first swivel member for relative rotation between the casing means and the first swivel member about an axis at right angles to the front face of the swivel member, the bearing means comprising
thrust means disposed to limit relative axial movement between the casing means and the first swivel member in a direction which would displace the front face of the swivel member rearwardly;
a second swivel member having
a flat rear face, and
first, second and third flow passages opening through the rear face,
the second swivel member being disposed in the casing means with the rear face of the second swivel member facing the front face of the first swivel member;
means securing the second swivel member in the casing means in a position in which the front face of the first swivel member and the rear face of the second swivel member are separated by from zero to 0.0005 inch; and
means secured against rotation relative to the casing means and second swivel member and providing separate passageways for communicating between the flow passages of the second swivel member and corresponding passageways of the handpiece;
at least one of said front face and said rear face being provided with a plurality of circular grooves concentric with said axis of relative rotation and opening toward the other of said front and rear faces,
at least two of the flow passages of the first swivel member communicating with the corresponding passages of the second swivel member via respective ones of said grooves.

4,260,383

DENTAL RETAINING SPLINT

Bernard Weissman, New York, N.Y., assignor to Ipco Hospital Supply Corporation, White Plains, N.Y.

Filed Aug. 27, 1979, Ser. No. 70,247
Int. Cl.³ A61C *5/04*
U.S. Cl. 433—225 **26 Claims**



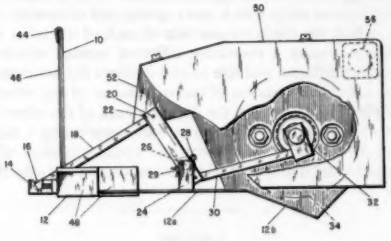
1. A dental retaining splint comprising:
a bar-like body member disposable in a channel extending from a first tooth to at least one adjacent tooth;
first retaining means extending outwardly from said body member for being disposed in a bore provided in the first tooth through a bottom wall of the channel, said first retaining means securing said body member to the first tooth when said body member is in a final position in the channel;
said first retaining means including at least one tubular member extending perpendicularly from said body member for being received in the bore of the first tooth;
said tubular member including guide means for guiding a drill during formation of a pilot hole in the first tooth when said body member is initially positioned in the channel with said tubular member disposed over and extending outwardly from the bottom wall of the channel, the pilot hole functioning as a lead hole for formation of the bore in the first tooth;
said guide means including an axial opening extending through said tubular member and through said body member; and
said body member including second retaining means longitudinally spaced from said tubular member for securing said body member to the adjacent tooth when said body member is in said final position.

4,260,384

OBSCURATION DEVICE FOR TANK GUNNERS

Garnett L. Hill, E. Town; Antal T. Molnar, and Henry I. Jehan, Jr., both of Radcliff, all of Ky., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 10, 1979, Ser. No. 56,159
Int. Cl.³ F41F *27/00*
U.S. Cl. 434—16 **7 Claims**



1. A tank gunner obscuration device for automatically and selectively obscuring the view out of the tank as seen by the tank gunner responsive to the firing of the main gun of the tank, said device comprising:
a. means for generating a trigger signal responsive to firing the main gun;
b. obscuration means responsive to said trigger signal for obscuring the view out of the tank for a predetermined time period subsequent to the firing of said gun; and
c. said obscuration means comprising a movable shutter and means for moving said shutter between a first blocking position, wherein the view out of said tank is obscured, and a second rest position.

4,260,385

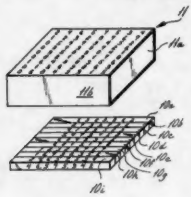
EDUCATIONAL AND RECREATIONAL MATHEMATICAL KIT IN THE FORM OF A SET OF SQUARE STICKS

Max A. Gulack, 880 Fifth Ave., New York, N.Y. 10021

Filed Aug. 18, 1978, Ser. No. 935,040
Int. Cl.³ G09B *19/00*
U.S. Cl. 434—208 **4 Claims**

1. An educational and recreational mathematical kit, comprising a set of n square sticks of equal length and a plurality of individual digits imprinted on each of the four sides of each of the sticks, all of said digits being of the same orientation and the digits on each of the sides of each respective stick occupying the same specific locations along the respective stick as measured from the ends of the block as the digits on each of the other sides of the respective stick and on each of the sides of all the other sticks the digits on one side of one of the sticks constituting a number which is a quotient obtained by dividing a number constituted of (P-1)/n nines, in which P is a prime number greater than 11 and n is an integer at least 2, by P, n

being so selected that (P-1)/n nines is the minimum number of nines divisible by P so that said quotient is an integral number, the digits on each of the other three sides of said one stick each constituting a number which is a respective different cyclic variation of said quotient, said quotient having (P-1)/n digits, including one or more actual or imaginary initial zeros to make up any otherwise occurring one or more digit deficit in said quotient and each cyclic variation of said quotient being formed by shifting a set of 1 to [(P-1)/n]−1 of said digits from one end of said number to the other end of said number without changing the sequence of digits in said set and by including



in said quotient prior to said shifting one or more actual zeros as said zero or zeros which make up any said otherwise occurring deficit, the digits on one side of each of the other sticks each constituting a respective different number which is a respective different multiple of said quotient but not constituting a said cyclic variation of said quotient or of any other said multiple of said quotient, the digits on each of the other three sides of each of said other sticks each constituting a number which is a respective different said cyclic variation of said respective said multiple of said quotient on said one side of that stick.

4,260,386

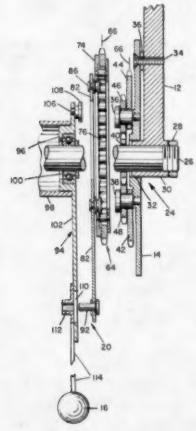
VARIABLE SPEED DRIVE

Steven P. Frohardt, 630 Veteran Ave., Los Angeles, Calif. 90024

Filed May 16, 1979, Ser. No. 39,586

Int. Cl.³ F16H *9/24*

U.S. Cl. 474—72 **20 Claims**



15. A variable speed drive comprising, in combination:

a driven element;

a rotatable drive element in driving engagement with the driven element such that degree of movement of a point on the driven element is directly related to the angular displacement, and to the distance from its axis of rotation, of a point on said rotatable drive element;

means for altering the separation of said axis of rotation and said point on said rotatable drive element;

means for maintaining said rotatable drive element in driving engagement with said driven element;

said driven element being rotatable in response to rotation of said drive element;

said driven element and said drive element being rotatable about parallel axes;

separation of said axis and said point on said drive element being made to vary in proportion to the separation of said axes;

means for biasing said drive element and said driven element in a relative direction such that their axes tend toward greater separation;

means for selectively altering the separation of said axes whereby driving engagement between said driving and driven elements is maintained despite change in said separation;

said rotatable drive element including at least three points disposed to define a circle centered at said axes of rotation of said drive element;

said rotatable drive element comprising at least three segments each having a driving portion which, in consort with the driving portions of the other of said segments, defines a circle;

the driving engagement of said driven element and said driving element occurring, at any angular displacement of said driving element, between said driven element and the driving portion of at least one of said segments;

said segments being mounted for angular displacement about respectively associated ones of parallel axes each equidistant from the axis of rotation of said driving element;

said driving element further comprising segment drive means for angularly displacing said segments simultaneously in like amount while maintaining driving engagement between said driven element and at least one of said segments;

said driven element comprising an annulus and said segments lying within, and being angularly displaceable in, the plane of said annulus; and

said means for selectively altering the separation of the axes of said driven element and said driving element comprising drive ratio changing means for displacing said annulus in said plane relative to the axis of rotation of said drive element.

4,260,387

DRUM PULLEY

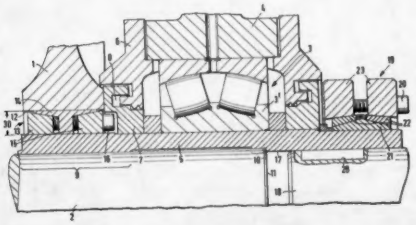
Ralph Muellenberg, Im Wiesengrund 6, 4048 Grevenbroich, Fed. Rep. of Germany

Filed Oct. 10, 1979, Ser. No. 83,457

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1978, 2855204

Int. Cl.³ F16H *55/36*

U.S. Cl. 474—903 **6 Claims**



1. A drum pulley arrangement for conveyor installations, comprising:

at least one drum pulley hub having a central opening;

a bearing having a central opening aligned with the hub opening;

a drum shaft extending through the hub opening and terminating with an end within the bearing opening;

a sleeve surrounding a portion of the drum shaft and extending through the hub opening and bearing opening, the sleeve have an interior opening of a diameter adapted to rest on the drum shaft at least in some region of the shaft end; and

a tightenable tapered clamping assembly for each drum pulley hub, the assembly serving when tightened to couple the sleeve to the drum shaft and to the hub for transmitting a drive torque from the sleeve to the hub and to the drum shaft.

4,260,388
PURIFICATION OF ANTHOCYAN SOLUTIONS

Bernard Mirabel, Fresnes, and Francois Meiller, Palaiseau, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Jan. 19, 1978, Ser. No. 870,856
Claims priority, application France, Jan. 24, 1977, 77 01890
Int. Cl.[2] C09B *61/00*
U.S. Cl. 8—646 **23 Claims**

1. A method for the purification of an aqueous anthocyan solution, which comprises contacting such solution with a particulate adsorbent selected from the group consisting of silica and metallic oxide adsorbents having a granulometry of between about 50 mμ and 5 mm, said adsorbent being coated with a thin film of a styrene polymer, and thence separating the adsorbent and treating it with an eluant.

4,260,389
FINISHING PROCESS

Gordon H. Lister, Leeds, Great Britain, assignor to Sandoz Ltd., Basel, Switzerland

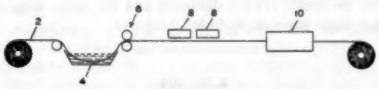
Continuation-in-part of Ser. No. 182,852, Sep. 22, 1971, abandoned. This application Sep. 30, 1974, Ser. No. 510,470
Claims priority, application United Kingdom, Sep. 22, 1970, 45144/70; Jun. 14, 1971, 27843/71
Int. Cl.[3] B08B *7/00*; D06C *1/00*
U.S. Cl. 8—491.1 **22 Claims**

1. A process for finishing a porous material which comprises the steps of (1) contacting the material with a liquor comprising a finishing agent, water and a foaming agent compatible with said finishing agent, at a liquor to material ratio of from 0.25:1 to 5:1, in a manner such that the liquor is not evenly distributed through the material, (2) subjecting the thus treated material to repeated mechanical action under conditions at which the finishing agent is substantially non-substantive to the material, whereby the liquor applied in step (1) becomes substantially uniformly distributed throughout the material, and (3) submitting said material to conditions to effect finishing thereof by said finishing agent.

4,260,390
ADDITIVE-SOLVENT PROCESS TO FORM EMBOSSED PRODUCT

Robert D. Lewis, Landisville, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Continuation-in-part of Ser. No. 637,897, Dec. 5, 1975, abandoned. This application Dec. 10, 1979, Ser. No. 102,246
Int. Cl.[3] D06P *5/00*
U.S. Cl. 8—481 **5 Claims**



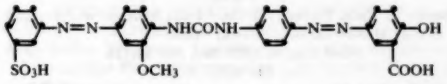
1. The method of forming an embossed pattern effect on pile fabric material which consists of the steps of:
(a) first providing a carpet material with a backing and a pile fiber upper face surface, the pile surface containing fibers which may be shrunk by a selected solvent while the backing material will be unaffected by the solvent;
(b) applying a first fiber shrinking solvent to at least part of the fiber face of the carpet, said solvent being in solution and being of a low enough concentration therein to cause no definite embossing of the pile face surface yarns;
(c) subsequently applying in a desired pattern to at least part of the areas containing said first applied solvent-containing solution, a second fiber shrinking solvent-containing solution, which solvent is the same as the first solvent applied, which solvent is at a concentration such that it can cause some fiber shrinkage, and which second solvent will increase the concentration of total solvent in at least some of those areas where the originally applied solvent-containing solution was applied to the point that the total solvent in those areas will be at a concentration sufficient to substantially shrink the fibers of the pile surface; and thereafter,
(d) subjecting the pile fabric to heat to cause the yarns in the fiber face surface which have been only wetted by the first fabric solvent-containing solution not to shrink, while in those areas where there has been a printing of the second solvent solution, the total solvent concentration has been increased to the point that the solvent causes shrinkage of fibers in the pile face surface to provide the desired embossed appearance.

4,260,391
STABLE CONCENTRATED SOLUTION OF A DYE OF THE DISAZO CLASS

Roger Lacroix, Huningue, France, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 1, 1979, Ser. No. 16,682
Claims priority, application Switzerland, Jan. 18, 1979, 487790/79
Int. Cl.[3] D06P *67/00, 3/60*
U.S. Cl. 8—519 **8 Claims**

1. A stable concentrated solution of 15 to 30 percent by weight of the dye of the formula

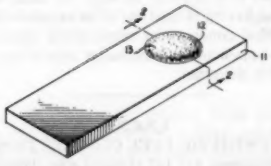


in the form of the lithium salt, dissolved in 5 to 35 percent by weight of water, 2 to 10 percent by weight of pyrrolidone or of N-alkyl-(C_1-C_4)-pyrrolidone and 35 to 50 percent by weight of a diethylene glycol monoalkyl ether.

4,260,392
METHOD AND APPARATUS FOR OBTAINING AN ALIQUOT OF A LIQUID IN A GEL MEDIUM

Martin J. Lee, Leonia, N.J., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Jul. 7, 1978, Ser. No. 922,611
Int. Cl.[3] G01N *33/00, 33/48*; C12Q *1/00*
U.S. Cl. 23—230 R **18 Claims**



1. A method of analyzing a sample comprising the steps of:
(a) contacting a surface of a gel mass containing a given quantity of reagent with a sample containing an analyte;
(b) diffusing at least a portion of said sample into said gel mass for a first period of time to obtain a precise aliquot of analyte within said gel mass which is less than said given quantity of reagent;
(c) further diffusing said aliquot through said gel mass for a second period of time to obtain a desired dilution of said analyte and achieve a complete reaction with said reagent;
(d) separating the non-diffused portion of sample from said surface of the gel mass after said first period of time; and
(e) measuring said reaction.

4,260,393

METHOD AND COMBINED TEST ELEMENTS FOR DETECTION OF HEME

Jacob J. Gibson, Alexandria, Va., assignor to Technology Resources, Inc., Washington, D.C.

Continuation-in-part of Ser. No. 896,000, Jun. 3, 1977, which is a continuation-in-part of Ser. No. 803,106, Jun. 3, 1977, abandoned, and Ser. No. 696,459, Jun. 16, 1976, abandoned. This application Jan. 15, 1979, Ser. No. 3,260

Int. Cl.[3] G01N *33/52, 33/72*

U.S. Cl. 23—230 B 11 Claims

1. The method of diagnostically testing the presence of heme in organic carrier material, comprising impregnating a bibulous test strip with a leuco dye, applying a test material for heme upon the bibulous test surface and wetting the test material with a developer solution, said developer solution comprising a peroxide solution in a solvent comprising methanol, said solvent also being a solvent for said leuco dye, whereby the developer solution passes in contact for hydrolysis of the peroxide by said heme, and then into contact with said leuco dye for oxidation thereof when heme is present, said dye and developer solution being sensitive to develop color in said leuco dye only when heme is present in the test material in quantity exceeding about 1 part of heme in 30,000 parts of test material.

4,260,394

PROCESS FOR REDUCING THE SULFUR CONTENT OF COAL

Stanley R. Rich, Wellesley Hills, Mass., assignor to Advanced Energy Dynamics, Inc., Natick, Mass.

Filed Aug. 8, 1979, Ser. No. 64,726

Int. Cl.[3] C10L *9/00*

U.S. Cl. 44—1 SR 8 Claims

1. A process for reducing the sulfur content of coal comprising the steps of pulverizing the coal to at least minus 200 mesh particles so as to free a substantial percentage of the pyrite component physically from the coal component, passing a mixture of said particles of the coal and the pyrite through an A.C. silent corona discharge so as to reduce adhesion by electrostatic forces and thereby de-agglomerate substantially all the particles, and thereafter separating said components one from the other.

4. A process for reducing the sulfur content of coal comprising the steps of pulverizing the coal so as to free a substantial percentage of the pyrite component physically from the coal component in a mixture of said components, passing said pulverized mixture through an A.C. silent corona discharge to de-agglomerate substantially all of the particles of the mixture and simultaneously to alter the surfaces of substantially all the pyrite particles to a depth of at least one molecule to a new chemical form having at least one of its magnetic susceptibility and its electrical conductivity substantially enhanced relative to the coal component, and thereafter separating said components one from the other.

4,260,395

SYNTHETIC FUEL COMPOSITION

Timothy J. Anderson, 123 1/2 Holland Ave., Westover, W. Va. 26505

Continuation-in-part of Ser. No. 893,640, Apr. 3, 1978, Pat. No. 4,169,711. This application Mar. 30, 1979, Ser. No. 25,609

Int. Cl.[3] C10L *5/12*

U.S. Cl. 44—16 C 7 Claims

1. A synthetic fuel composition comprising at least about 40% by weight of coal particles, from about 5 to 35% by weight of slack wax, a binder selected from the group consisting of sodium silicate and potassium silicate and an oxidizer.

2. The synthetic fuel composition of claim 1 wherein the silicate is employed as an aqueous solution in an amount of from about 2 to 10% by weight of the synthetic fuel composition mixture.

3. The synthetic fuel composition of claim 2 wherein the oxidizer is sodium nitrate, potassium nitrate or mixtures thereof and is employed in an amount of from 5 to 15% by weight.

4,260,396

COMPOSITIONS FOR POLISHING SILICON AND GERMANIUM

Rimantas Glemza, Baltimore, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Jan. 16, 1978, Ser. No. 869,402

Int. Cl.[3] C09K *3/14*

U.S. Cl. 51—298 33 Claims

1. A composition for polishing silicon and germanium comprising a silica hydrogel polishing agent having an average particle size of from about 1 to less than about 30 microns and from about 0.5 to about 30 percent by weight of the polishing agent of a suspending agent selected from the group consisting of water-soluble carboxypolymethylene gums and xanthum gums.

4,260,397

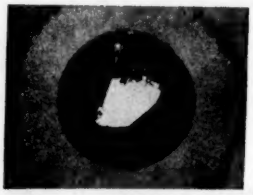
METHOD FOR PREPARING DIAMOND COMPACTS CONTAINING SINGLE CRYSTAL DIAMOND

Harold P. Bovenkerk, Worthington, Ohio, assignor to General Electric Company, Worthington, Ohio

Filed Aug. 23, 1979, Ser. No. 69,206

Int. Cl.[3] B24D *3/02*

U.S. Cl. 51—307 3 Claims



1. An improved wire drawing die blank compact comprising an inner mass of sintered polycrystalline material selected from diamond, cubic boron nitride and mixtures thereof and an outer annular mass of metal bonded carbide bonded to said inner mass; wherein the improvement comprises a single crystal diamond, having a largest dimension of at least one millimeter, embedded within the center of the polycrystalline inner mass, wherein there is diamond to diamond crystal bonding between the single crystal diamond and the inner mass when the inner mass material includes diamond.

4,260,398

COUNTERCURRENT SPARGER

Jackson A. Ransohoff, 5421 York Ln., Bethesda, Md. 20014

Filed Dec. 1, 1977, Ser. No. 856,553

Int. Cl.[3] B01D *19/00*

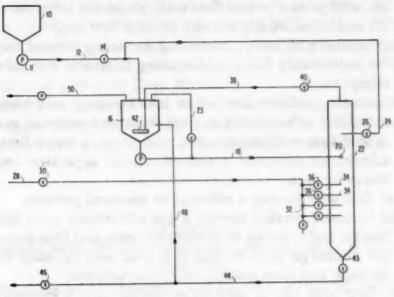
U.S. Cl. 55—41 30 Claims

1. A continuous process for removing a dissolved substance from a liquid which comprises:

(a) tangentially flowing said substance containing liquid into a vertically positioned cylindrical column such that said liquid circumferentially flows within and down said column;

(b) concurrently introducing to said column at one or more points below the point at which said liquid enters said column, a fluid which is less dense than said liquid and substantially insoluble in said liquid, said fluid entering said column tangentially at a velocity substantially higher than the velocity of said liquid so that said fluid flows

around the axis of said column in the same rotational direction as said liquid;



(c) concurrently withdrawing said fluid from the top of said column, and withdrawing said liquid from the bottom of said column.

4,260,399

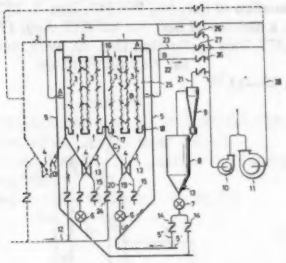
METHOD OF REMOVING TAR MIST AND APPARATUS THEREFOR

Takuya Kawasaki, Takarazuka, Japan, assignor to Nikku Industry Co., Ltd., Hyogo, Japan

Continuation-in-part of Ser. No. 715,637, Aug. 18, 1976, abandoned. This application Jan. 2, 1979, Ser. No. 108

Int. Cl.³ B01D *53/04, 46/04*

U.S. Cl. 55—74 **6 Claims**



1. A method of removing tar mist from gas containing the same comprising:

(1) maintaining, in an apparatus for absorbing tar from a tar mist-containing gas, the outside of gas-permeable filters mounted vertically in a tar-mist collecting tank at a reduced pressure by means of a low volume first blower while feeding a tar absorbing fine powder entrained in air into an upper portion of the inside of said filters, whereby the fine powder is cuased to fall downwardly within said filters and to attach to the inner surfaces thereof, thereby forming a tar absorbing fine powder layer on said inner surfaces;

(2) shutting off said first blower from said collecting tank, further reducing the pressure around said filters by means of a high volume second blower while introducing a tar mist-containing gas into said filters, and withdrawing said gas through said filters, whereby the tar is absorbed by the tar-absorbing fine powder layer, and

(3) stripping the fine powder containing the absorbed tar from the filter surface and discharging the powder from the apparatus.

5. Apparatus for removing tar from a tar mist-contaminated gas stream comprising, in combination, a vertical tubular filter element having an inner surface, an outer surface, an open upper end, and an open lower end, a vertical closed vessel having a wall with an inner surface and an outer surface, said closed vessel providing a space surrounding said vertical tubular filter element, an upper gas manifold and a lower gas manifold communicating with said filter element and sealing the upper and lower ends of said filter element from the space surrounding it, support plates mounted on the inner surface of said wall for supporting said filter element, a low volume first blower communicating with the space surrounding said filter element for maintaining a slightly reduced pressure around said filter element, an absorbent storage means communicating with the upper gas manifold and the low volume blower for depositing an entrained powdered tar-absorbent unreactive solid as an absorbent layer on the inner surface of said filter element while passing a stream of gas containing said absorbent entrained therein through said filter element, a high volume second blower communicating with the space surrounding said filter element for maintaining a greatly reduced pressure around said filter element, a source of tar mist-contaminated gas communicating with the lower gas manifold and the high volume blower to provide means for passing said tar mist-contaminated gas through said filter element to absorb the tar on the tar absorbent, means for dislodging the tar absorbent from said element, and means for discharging the dislodged tar absorbent from said apparatus.

4,260,400

DEVICE FOR POWDER RECOVERY FROM POWDER-SPRAY HOUSINGS

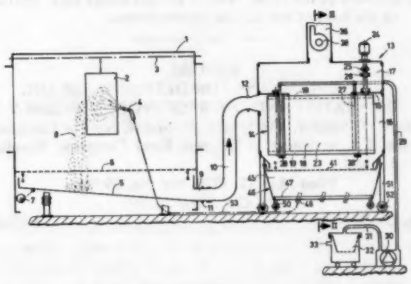
Arno Scalet, Fl-Schaan, Liechtenstein, assignor to Interesco International Research Corporation, Liechtenstein, Fed. Rep. of Germany

Filed Apr. 2, 1979, Ser. No. 25,812

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1978, 2813854

Int. Cl.³ B01D *46/36*

U.S. Cl. 55—290 **11 Claims**



1. A device for recovering powder from powder spray housings and the like which includes a filter unit mounted in a separate filter housing which filter unit which has a crude gas side and a pure gas side separated by a filter element, an exhaust coupled to the pure gas side of the filter unit and a cleaning device coupled to the filter unit for effecting the continuous removal of powder drawn against the filter element, the improvement comprising:

said filter element including at least one endless filter band which is movable along said pure gas side and is received for movement about a drive roller and a tension roller spaced-apart from one another, said endless filter band having two oppositely-disposed band portions disposed between said rollers, each of which separate said crude gas side from said pure gas side; and

said cleaning device being disposed to remove powder from said band.

4,260,401

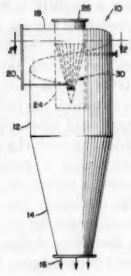
REGENERATIVE CYCLONE-TYPE AIR/PARTICULATE CONCENTRATOR AND COLLECTOR

Andrew Truhan, P.O. Box 467, Granite Falls, N.C. 28630, and William R. Haynes, Rte. 1, Box 127, Taylorsville, N.C. 28681

Continuation-in-part of Ser. No. 96,488, Nov. 21, 1979. This application Mar. 14, 1980, Ser. No. 130,472

Int. Cl.³ B01D *45/12*

U.S. Cl. 55—339 **3 Claims**



1. A cyclone-type particulate material collector comprising:
a generally cylindrical body portion having a conical lower particulate material outlet portion;
a dirty gas inlet volute at the upper end of the cylindrical body portion;
a cylindrical gas outlet tube projecting through the inlet volute and terminating in the cylindrical body portion;
a conical particulate material concentrator mounted in the outlet tube, said conical concentrator positioned with its base downstream in respect to the direction of gas flow through the gas outlet tube, the sidewall of said conical concentrator formed of a plurality of tapered generally U-shaped vane members; and
a skimmer in the upper wall of the gas outlet tube upstream of the base of the conical concentrator.

4,260,402

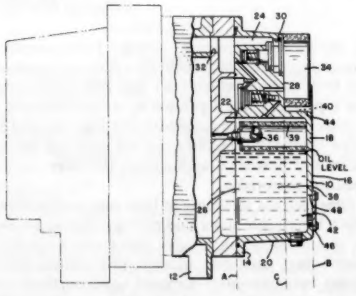
HOUSING MEANS FOR DEFINING AIR/OIL SEPARATOR AND OIL RESERVOIR ASSEMBLY

Robert W. Shaffer, and Henry W. Morse, both of Campbellsville, Ky., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed May 17, 1979, Ser. No. 39,793

Int. Cl.³ B01D *50/00*

U.S. Cl. 55—505 **4 Claims**



1. Housing means, for mounting thereof to an oil-flooded gas compressor, for defining an air/oil separator and oil reservoir assembly for the compressor comprising:
a die-cast housing;
said housing being of substantially dished shape, having a first, substantially uniplanar wall, and a second, perimetrical wall joined to said first wall, about the terminal edges of, and substantially normal to, said first wall;
said second wall having mounting surfacing formed thereon for replaceably fixing said housing to an end wall of a gas compressor;
an arcuate partition formed in said housing, said partition extending substantially normal from an innermost surface of said first wall, subdividing said housing into a first, gas admittance area and a second, air/oil separator and oil reservoir area;
said first wall having a relieved or recessed portion;
said recessed portion having a gas admittance port formed therein and opening therethrough onto said first area; and
a gas discharge port in said first wall and opening therethrough and onto said second area; wherein
said first wall has an outermost surface which subsists in a first plane;
said mounting surfacing subsists in a second plane parallel to said first plane;
said first and second planes defining therebetween the depth or width dimension of said housing means; and further including
a gas filter replaceably mounted to an outermost surface of said first wall, said filter being confined within said dimension; and
said gas filter is mounted in said recessed portion, and overlies said gas admittance port.

4,260,403

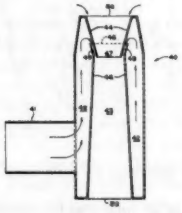
BUSHING ENVIRONMENTAL CONTROL APPARATUS

Thomas C. Bour, Glenshaw, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 966,547, Dec. 5, 1978, abandoned, which is a division of Ser. No. 825,317, Aug. 17, 1977, Pat. No. 4,146,377. This application Dec. 20, 1979, Ser. No. 105,824

Int. Cl.³ C03B *37/00*

U.S. Cl. 65—11 W **1 Claim**



1. An apparatus for forming strands from glass fiber filaments comprising:
a bushing for forming glass fiber filaments,
a collecting means for forming a strand of said filaments positioned below said bushing,
a chamber positioned below and closely adjacent to said bushing having end walls and spaced inner and outer sidewalls which provide a passageway for the movement of glass fiber filaments from said bushing to said collecting means, an outer sidewall of said chamber being provided with an inlet opening to permit the introduction of a gas into said chamber,
said inner sidewalls of said chamber which define said passageway being composed of upper converging portions defining a throat in said passageway and having depending ends and lower opposing diverging portions which terminate in said ends which extend a substantial distance above and are coextensive with the depending ends of said portions, and

a flared extension secured to said ends of each of said lower portions which cooperate with said upper converging portions so as to form a linear path for the flow of said gas from said chamber into said passageway below said throat to thereby provide a venturi-induced uniform flow of said gas in a linear path of flow from the upper portion of said chamber into said passageway in the direction of movement of said glass fiber filaments,

whereby variations in the velocity and temperature in the region below the bushing is reduced and heat is removed from the bushing tips at a substantially constant rate.

4,260,404

METHOD FOR REDUCING ROLL MARKING OF GLASS SHEETS

Harold R. Gorman, Oakmont, and Leonard R. Plocki, Natrona Heights, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 9, 1979, Ser. No. 37,243
Int. Cl.³ C03B *35/18*
U.S. Cl. 65—27 **5 Claims**

1. In a method for treating flat glass sheeting which is supported by rotatable metal rolls adaptable to convey said glass wherein roll marking defects increase as the roll surface deteriorates, the improvement which comprises the steps of:

a. briefly interrupting the glass treatment;

b. applying in situ at substantially operating temperature an aqueous composition consisting essentially of boron nitride and a high temperature binder selected from the group consisting of aluminum oxide, magnesium silicate and zirconium oxide to deposit a coating on the roll surface;

c. allowing said coating to set; and

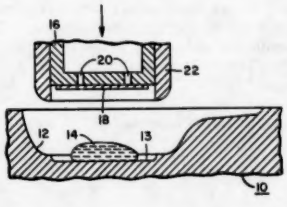
d. resuming the glass treatment process.

4,260,405

PRESS FORMING GLASS ARTICLES HAVING ENCAPSULATED MATERIAL

Raymond R. Ambrogi, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jun. 25, 1979, Ser. No. 51,711
Int. Cl.³ C03B *11/00*
U.S. Cl. 65—42 **9 Claims**



1. A method of press forming an article from molten glass while simultaneously fully encapsulating an insert therewithin which comprises, delivering a first charge of molten glass to a mold, pressing said first charge into an initially formed article while simultaneously pressing an insert within one surface thereof, depositing a second charge of molten glass upon said initially formed article, and pressing said second charge of molten glass into a finished integral article incorporating said initially formed article and simultaneously fully encapsulating said insert therewithin.

4,260,406

GELLED SOLDER GLASS SUSPENSIONS FOR SEALING GLASS OR CERAMIC PARTS

Daniel W. Corbett, Beaver Dams, and Donald L. Guile, Horseheads, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Aug. 17, 1978, Ser. No. 934,348
Int. Cl.³ C03C *27/00*
U.S. Cl. 65—43 **11 Claims**

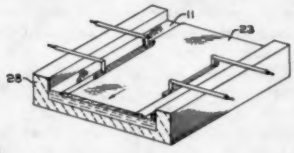
1. In the method for manufacturing a cathode ray tube wherein a glass funnel member is sealed to a glass panel member by applying a solder glass suspension to at least one of the mating surfaces on the panel or funnel member, joining the panel and funnel members, and firing the panel and funnel members to provide an integral sealed assembly, the improvement wherein the solder glass suspension consists of a reversible gel which is a conventional solder glass frit-organic vehicle suspension for the sealing of ceramic parts the organic vehicle consisting essentially of a cellulose binder and an organic solvent for the binder, and which further includes a gelling agent which imparts a gelled structure to the frit-vehicle suspension, which agent is present in an amount at least sufficient to render the suspension essentially non-flowable, non-settling and non-sagging under the influence of gravity and which gelled suspension, after it is sheared by remixing or dispensing, is rendered relatively flowable and is readily extruded onto a sealing surface in a form which retains its extruded shape and rapidly regels to be essentially non-flowable, non-settling and non-sagging under the influence of gravity, the gelling agent being one which does not adversely affect the sealing process or the mechanical integrity of the final seal.

4,260,407

GAS CUSHIONED ICE SKATE EDGE STRETCHER

Ronald L. Schwenninger, Ridgeley, W. Va., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 21, 1979, Ser. No. 41,272
Int. Cl.³ C03B *18/06*
U.S. Cl. 65—99 A **20 Claims**



1. A method of manufacturing float glass comprising delivering molten glass at a controlled rate to a molten metal bath, forming an advancing layer of molten glass in ribbon form, controlling the location of a margin of the glass ribbon by means of an elongated blade extending in the direction of glass travel, wherein the glass is penetrated by a tapered, lower edge of the blade, and delivering pressurized gas through an open conduit to open port means extending through the blade to the vicinity of the lower extremity of the lower edge of the blade from which the pressurized gas is released at sufficient pressure to form a lubricating film of gas between the glass and substantially the entire penetrated portion of the blade, so that the glass slides freely under the blade.

8. Apparatus for forming glass comprising a tank structure holding a bath of molten metal for supporting a ribbon of molten glass as it is advanced on the surface of the molten metal, thickness control means comprising an elongated blade extending generally in the direction of glass travel and having a tapered, lower edge oriented so as to penetrate into a margin of the glass, the blade including an open gas supply conduit in communication with a source of pressurized gas, and port means extending from the gas supply chamber to substantially

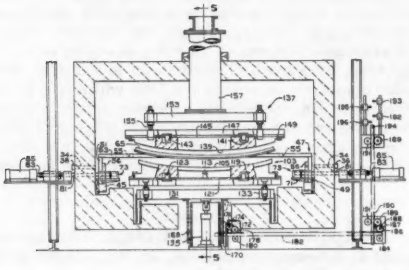
the lower extremity of the lower edge of the blade whereby a stream of gas is released closely adjacent to the lower extremity of the blade to form a lubricating layer between the glass and substantially the entire penetrated surface portion of the blade.

4,260,408

USE OF SPEED CHANGES DURING CYCLING OF A SHAPING MOLD

Thomas J. Reese, Sarver, and Joseph J. Fisher, Oakmont, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 2, 1979, Ser. No. 90,944
Int. Cl.³ C03B *23/03*
U.S. Cl. 65—106 **11 Claims**



1. A method of removing a sheet supported at its edge portions on an outline mold for shaping, comprising the steps of:

heating the sheet supported at its edge portions on the outline mold to a shaping temperature;

moving a shaping mold toward the supported sheet at a first velocity and prior to engaging the supported sheet by the shaping mold;

decelerating the shaping mold to a second velocity less than the first velocity;

moving the shaping mold at the second velocity through the outline mold to engage the supported sheet, the second velocity being at a speed sufficiently slow such that on engagement of the sheet by the shaping mold, the initial engaging relationship of the sheet to the shaping mold is maintained; and

shaping the sheet.

7. An apparatus for removing a sheet from an outline mold for shaping comprising:

an outline mold for supporting the sheet at its edge portions in a sheet reference plane;

a shaping mold;

means for driving said shaping mold in a first direction through said outline mold, said driving means moves said shaping mold at a first velocity and at a second velocity less than the first velocity;

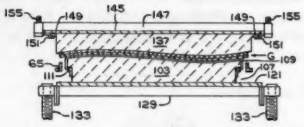
sensing means responsive to the movement of said shaping mold moving in the first direction and acting on said driving means to move said shaping mold toward said outline mold at the first velocity and prior to said shaping mold passing through the sheet reference plane acting on said drive means to move said shaping mold at the second velocity, the second velocity being at a speed sufficiently slow such that on engagement of the sheet by the shaping mold the initial engaging relationship of the sheet to the shaping mold is maintained.

4,260,409

ATTACHING FLEXIBLE COVER TO MOLD FOR SHAPING GLASS

Thomas J. Reese, Sarver, and Edward R. Rodgers, Saxonburg, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 2, 1979, Ser. No. 91,001
Int. Cl.³ C03B *23/03*
U.S. Cl. 65—273 **3 Claims**



1. In an apparatus for shaping a glass sheet wherein the apparatus is of the type having an outline mold for supporting the glass sheet at its marginal edge portions; a pair of opposed shaping molds each having a solid shaping surface complementary to one another and a fabric material over the shaping surface of each mold; means for moving one of the shaping molds defined as the first shaping mold along a reciprocating linear path through a sheet engaging position toward the other mold; means for positioning the outline mold in the reciprocating linear path with the sheet in the sheet engaging position; and means responsive to the outline mold in the reciprocating path for actuating the moving means to move the first shaping mold along the path through the outline mold to engage the sheet wherein the innerwall of the outline mold and outer wall dimensions of the first shaping mold are sized for minimal spacing therebetween as the first shaping mold moves through the outline mold to engage the sheet, the improvement comprising:

an undercut portion in the outer wall portion of the first shaping mold spaced from its shaping surface;

the cover positioned over the shaping surface of the first shaping mold and having end portions extending over said undercut portion; and

means for securing the cover in tight relationship over the shaping surface of the first shaping mold, said securing means mounted entirely within said undercut portion.

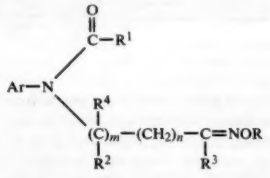
4,260,410

HERBICIDAL AND PLANT-GROWTH-REGULATING N-HALOACETYLPHENYLAMINO CARBONYL OXIMES

William L. Schinski, San Rafael; David C. K. Chan, Petaluma, and Irene C. Huang, Huntington Beach, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 892,365, Mar. 31, 1978, Pat. No. 4,174,210. This application Feb. 23, 1979, Ser. No. 14,410
Int. Cl.³ A01N *37/22*; C07C *131/00, 103/375*
U.S. Cl. 71—76 **21 Claims**

1. A compound of the formula



wherein Ar is phenyl or phenyl substituted with 1 to 4 of the same or different substituents selected from fluoro, chloro, bromo, iodo, or alkyl of 1 to 4 carbon atoms, or substituted with 1 to 2 of the same or different substituents selected from alkoxy of 1 to 4 carbon atoms, nitro or haloalkyl of

1 to 2 carbon atoms and 1 to 3 of the same or different halogens selected from fluoro, chloro, bromo or iodo;

R^1 is halomethyl of 1 to 3 of the same or different halogens selected from fluoro, chloro, bromo or iodo;

R^2 and R^3 are each independently hydrogen, alkyl of 1 to 6 carbon atoms, phenyl, benzyl, phenyl or benzyl substituted with 1 to 2 of the same or different substituents selected from fluoro, chloro, bromo, iodo, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or nitro; haloalkyl of 1 to 4 carbon atoms and 1 to 10 of the same or different halogens selected from fluoro, chloro, bromo or iodo, cyanoalkyl of 2 to 6 carbon atoms, alkoxyalkyl of 2 to 6 carbon atoms, alkylthioalkyl of 2 to 6 carbon atoms, or thiocyanoalkyl of 2 to 6 carbon atoms;

R^4 is hydrogen or alkyl of 1 to 6 carbon atoms;

n is 0 or 1;

m is 0 or 1;

R is hydrogen, alkyl of 1 to 6 carbon atoms, alkenyl of 3 to 6 carbon atoms, alkynyl of 3 to 6 carbon atoms, alkylthio of 2 to 6 carbon atoms, haloalkyl of 1 to 4 carbon atoms and 1 to 10 of the same or different halogens selected from fluoro, chloro, bromo or iodo, alkoxyalkyl of 2 to 6 carbon atoms, cyanoalkyl of 2 to 6 carbon atoms, phenyl, benzyl, phenyl or benzyl substituted with 1 to 2 of the same or different substituents selected from fluoro, chloro, bromo, iodo, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or nitro, or R is acyl of the formula

wherein R^5 is hydrogen, alkyl of 1 to 4 carbon atoms, haloalkyl of 1 to 4 carbon atoms and 1 to 10 of the same or different halogens selected from fluoro, bromo, chloro or iodo, alkoxyalkyl of 2 to 6 carbon atoms, alkylthioalkyl of 2 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, alkylthio of 1 to 6 carbon atoms, acetonyl, or the group —NR′R″ wherein R′ and R″ are independently hydrogen, alkyl of 1 to 6 carbon atoms or phenyl.

14. An herbicidal composition comprising a biologically inert carrier and an herbicidally effective amount of the compound of the formula defined in claim **1**.

15. A plant-growth-regulating or retarding composition comprising a biologically inert carrier and a plant-growth-regulating or retarding amount of the compound of the formula defined in claim **1**.

16. A method for retarding plant growth which comprises applying to said plants or their growth environment a plant-growth-retarding amount of the compound of the formula defined in claim **1**.

17. A method for killing vegetation which comprises applying to said vegetation or its growth environment an herbicidally effective amount of the compound of the formula defined in claim **1**.

4,260,411

N′-PHENYL-N-METHYLUREA DERIVATIVES

Ryo Yoshida, Kawanishi; Ichiki Takemoto, Takarazuka; Seizo Sumida, Nishinomiya, and Katsuzo Kamoshita, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

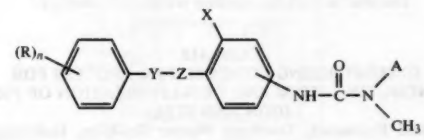
Filed Mar. 12, 1979, Ser. No. 19,613

Claims priority, application Japan, Mar. 13, 1978, 53-28897

Int. Cl.[3] **A01N** *47/30;* **C07C** *127/19*

U.S. Cl. 71—88 **18 Claims**

1. A compound of the formula:



wherein A is a hydrogen atom, a methyl group or a methoxy group, R is the same or different and is a halogen atom, a lower alkyl group, a lower alkoxy group, a lower alkylthio group, a trifluoromethyl group, a cyano group or a methylenedioxy group, X is a hydrogen atom or a halogen atom, Y is an oxygen atom or a sulfur atom, Z is a lower alkylene group and n is an integer of 0 to 3, provided that the substituted ureido group is present at the m- or p-position with respect to the substituent represented by the symbol X and at the same time at the m- or p-position with respect to the substituent represented by the symbol Z.

14. A method for controlling weeds and/or fungi, which comprises contacting the weeds and/or fungi with an effective herbicidal or fungicidal amount of at least one of the compounds according to claim **1**.

4,260,412

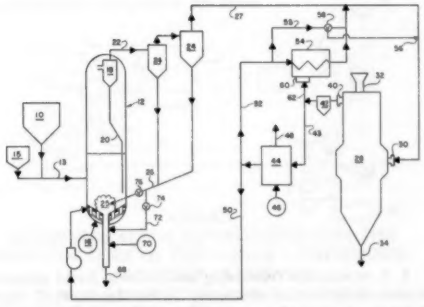
METHOD OF PRODUCING DIRECT REDUCED IRON WITH FLUID BED COAL GASIFICATION

Frank V. Summers; David C. Meissner, both of Charlotte, N.C., and John C. Scarlett, Toledo, Ohio, assignors to Midrex Corporation, Charlotte, N.C.

Filed Jan. 16, 1980, Ser. No. 112,680

Int. Cl.[3] **C21B** *13/02*

U.S. Cl. 75—35 **6 Claims**



1. A method of producing direct reduced iron with fluid bed coal gasification, comprising:

(a) introducing particulate coal to a fluidized bed, ash agglomerating, gasification chamber;

(b) reacting said coal at high temperature in the presence of oxygen to form a gasification gas;

(c) withdrawing the gasification gas from said chamber;

(d) removing particulate materials from said gasification gas;

(e) mixing the dust-free gasification gas with hot, cleaned top

gas from a direct reduction furnace to form a heated reducing gas;
(f) introducing said heated reducing gas to a direct reduction shaft furnace to reduce the iron oxide therein to a highly metallized iron product and to form a reacted top gas;
(g) withdrawing said reacted top gas from said furnace;
(h) removing acid gases from said reacted top gas to produce a hydrogen and carbon monoxide rich recycle gas;
(i) reheating a portion of said recycle gas prior to mixing it with said dust-free gasification gas; and
(j) injecting a second portion of said cooled, cleaned recycled gas into the fluidized bed within said gasification chamber to cool the reaction within said chamber.

4,260,413

DESULFURIZING COMPOSITION, PROCESS FOR PRODUCING THEM AND DESULFURIZATION OF PIG IRON AND STEEL

Alfred Freissmuth, Trostberg; Werner Gmöhling, Hufschlag, and Heinrich Röck, Trostberg, all of Fed. Rep. of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Filed Jul. 24, 1979, Ser. No. 60,149
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1978, 2834216
Int. Cl.³ C21C *7/02*
U.S. Cl. 75—58 **12 Claims**

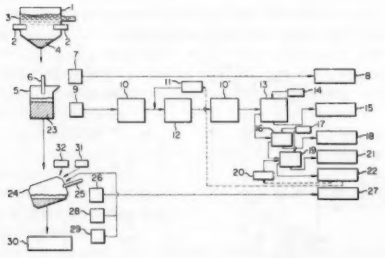
1. A process for the production of a powdered, readily-fluidizable composition for desulfurizing molten pig iron and steel which comprises grinding a desulfurizing agent being 80% $<63\mu$ in size for 5 to 30 minutes with about 3 to 20% by weight of carbon.

4,260,414

PROCESS FOR RECOVERING AND UTILIZING USEFUL SUBSTANCES FROM MOLTEN METAL PRODUCED DURING REDUCTION TREATMENT OF STEEL SLAG

Gyoichi Suzuki, Tokyo; Ryo Ando, Yokohama; Tatsuo Koyama, Yokohama; Shoji Kubodera, Yokohama, and Renichi Kondo, Tokyo, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 1, 1979, Ser. No. 44,375
Claims priority, application Japan, Jun. 30, 1978, 53/78514
Int. Cl.³ C21B *3/04*
U.S. Cl. 75—60 **7 Claims**



1. A process for recovering and utilizing useful substances from a molten metal containing Ti, Si, Mn, V, P, C and the balance essentially iron, which has been produced in the process of manufacturing a steel slag cement from a steel slag discharged from a top-blowing oxygen converter, as the molten metal recovered during a reduction treatment of said steel slag, which comprises the steps of:
(1) oxidizing said molten metal in an acidic refining furnace lined with an acidic refractory to a primary oxidation treatment by blowing oxygen in contact with said molten metal to oxidize most of the Ti and Si contained in said molten metal into TiO_2 and SiO_2 which form a primary slag on the surface of said molten metal, and discharging said primary slag from said said acidic refining furnace to recover and utilize said primary slag as substitutes for iron sand for a blast furnace burden material; then
(2) following said primary oxidation treatment and said primary slag discharge, oxidizing said molten metal in said acidic refining furnace to a secondary oxidation treatment by blowing additional oxygen in contact with said molten metal to oxidize most of the Mn and V contained in said molten metal into MnO and V_2O_5, which then form a secondary slag on the surface of said molten metal, and discharging said secondary slag from said acidic refining furnace to recover and utilize said secondary slag as a raw material mainly comprising MnO for manufacturing ferromanganese, a raw material mainly comprising V_2O_5 for manufacturing ferrovanadium and a raw material for a phosphoric fertilizer; and then
(3) following said secondary oxidation treatment and said second slag discharge, oxidizing said molten metal in a basic refining furnace lined with a basic refractory to a tertiary oxidation treatment while adding a slag forming agent by blowing oxygen in contact with said molten metal to oxidize most of the C, and P contained in said molten metal into P_2O_5, which then forms a tertiary slag on the surface of said molten metal, and discharging said tertiary slag from said basic refining furnace to recover and utilize said tertiary slag as a Thomas phosphoric fertilizer or a raw material for manufacturing yellow phosphorus; and
(4) finally obtaining the remaining molten metal as a low-phosphorus high-quality steel.

4,260,415

DECARBURIZING MOLTEN METAL

Richard P. Simmons, Sewickley, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

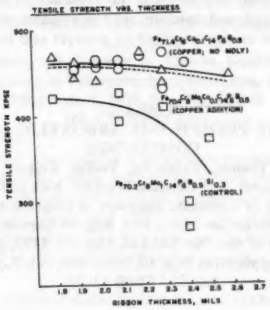
Filed Dec. 12, 1979, Ser. No. 102,607
Int. Cl.³ C21C *5/34*
U.S. Cl. 75—60 **12 Claims**

1. An improved method of decarburizing molten metal comprising the steps of:
injecting a mixture of oxygen and an inert gas selected from the group consisting of nitrogen, argon, xenon, neon, helium, and mixtures thereof from separate gas sources into molten metal below the surface thereof, at a high oxygen to inert gas ratio of at least about 2:1, whereby a portion of the injected oxygen reacts with the carbon to evolve carbon oxides,
during injection utilizing from about 2.5 to 12% of the injected inert gas to shroud the remainder of the injected gaseous mixture,
progressively decreasing the oxygen to inert gas ratio as the carbon content in the molten metal decreases and as the temperature of the molten metal increases, and
continuing injecting the gaseous mixture until the carbon content in the molten metal decreases to the desired level,
wherein the improvement comprises:
while continuing to utilize from about 2.5 to 12% of the injected inert gas from a separate gas source to shroud the remainder of the injected gaseous mixture, supplying dry air to the remainder of the injected gaseous mixture in a quantity sufficient for the nitrogen in the dry air to fulfill the inert gas requirements for the remainder of the injected gaseous mixture, and for the oxygen in the dry air to fulfill a portion of the oxygen requirements for the remainder of the injected gaseous mixture, and
reducing the volume of oxygen and inert gas injected from separate gas sources in accordance with the volume of oxygen and nitrogen injected with the supply of dry air to maintain the required oxygen to inert gas ratio.

4,260,416
AMORPHOUS METAL ALLOY FOR STRUCTURAL REINFORCEMENT

Sheldon Kavesh, Whippany, and Claude Henschel, Mount Freedom, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Sep. 4, 1979, Ser. No. 71,912
Int. Cl.³ C22C *38/32, 38/36, 38/06*
U.S. Cl. 75—125 **8 Claims**



1. Metal alloy that is primarily glassy, has improved ultimate tensile strength, bend ductility, resistance to thermal embrittlement and resistance to corrosion and stress corrosion, said alloy having a composition defined by the formula $Fe_aCr_bC_cP_dMo_eW_fCu_gB_hSi_i$ where

"a" ranges from about 61 to 75 atom percent,
"b" ranges from about 6 to 10 atom percent,
"c" ranges from about 11 to 16 atom percent,
"d" ranges from about 4 to 10 atom percent,
"e" ranges from about 0 to 4 atom percent,
"f" ranges from about 0 to 0.5 atom percent,
"g" ranges from about 0 to 1 atom percent,
"h" ranges from about 0 to 4 atom percent, and
"i" ranges from about 0–2 atom percent,

with the proviso that the sum [c+d+h+i] ranges from 19 to 24 atom percent and the fraction [c/(c+d+h+i)] is less than about 0.84.

4,260,417
BATCH DESULFURIZATION IN A CORELESS INDUCTION FURNACE

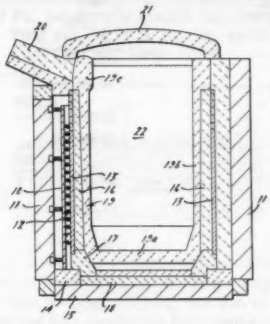
Thomas E. Bartos, Woodhaven, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 5, 1979, Ser. No. 90,952
Int. Cl.³ C22C *33/08;* C21C *7/02;* C22B *4/00*
U.S. Cl. 75—130 R **4 Claims**

1. A method of internal furnace batch type desulfurization of molten metal comprising:

(a) introducing into a furnace, lined with alumina-chrome refractory material, a charge consisting essentially of ferrous metal units, at least a portion of which is in the form of scrap iron, alloying ingredients and 0.5–3% by weight calcium carbide,

(b) melting said charge and superheating the melted charge to form an iron solution,



(c) deslaging said molten metal to remove slag containing sulfur and other impurities.

4,260,418
METHOD FOR PRODUCING MOLYBDENUM BEARING FERROCHROMIUM

Orville W. Reen, New Kensington, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Sep. 4, 1979, Ser. No. 71,822
Int. Cl.³ C22C *33/00;* B23K *35/34*
U.S. Cl. 148—126 **5 Claims**

1. A method for producing a low nitrogen, low carbon ferrochromium containing molybdenum comprising the steps of blending particles of a material consisting essentially of a high carbon ferrochromium and particles of an oxygen and molybdenum bearing compound, heat treating the blend in a vacuum at a temperature of 1600° F. or over and a pressure of 10 torr or below and cooling the blend.

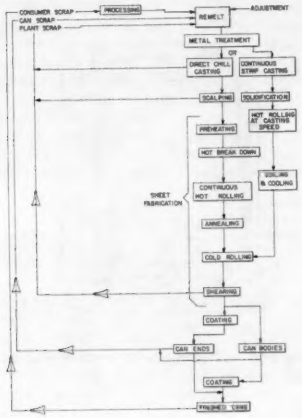
4,260,419
ALUMINUM ALLOY COMPOSITION FOR THE MANUFACTURE OF CONTAINER COMPONENTS FROM SCRAP ALUMINUM

King G. Robertson, Golden, Colo., assignor to Coors Container Company, Golden, Colo.

Filed Aug. 4, 1978, Ser. No. 931,036
Int. Cl.³ C22C *21/08*
U.S. Cl. 75—142 **8 Claims**

1. An aluminum alloy composition consisting essentially of silicon 0.15–0.40%; iron 0.3–0.7%, manganese 0.6–0.8%; magnesium 1.6–2.0%; copper 0.3–0.4%; and titanium 0–0.15%, the balance being essentially aluminum, with traces of other materials each present in an amount up to no more than 0.05% by weight, said manganese and magnesium being present in a total

concentration of 2.0–2.8% and in a ratio of magnesium to manganese of between 1.4:1 and 4.4:1, said composition being



formed from aluminum container scrap and additional primary aluminum in proportions to achieve said composition.

4,260,420

AQUEOUS LIQUID ADHESIVE COMPOSITION AND METHOD

Denis H. Charnley, Woburn, Mass., assignor to Chemcom Corporation, Boston, Mass.

Filed Jul. 11, 1979, Ser. No. 56,723
Int. Cl.³ C04B *35/16*
U.S. Cl. 106—74 **10 Claims**

1. An aqueous liquid adhesive having an increased bonding capacity compared to the bonding capacity of the corresponding aqueous alkali-metal silicate solution alone comprising:

an aqueous alkali-metal silicate solution; and

a sufficient quantity of dry flocculent alkali-metal silicate particles dissolved in said aqueous alkali-metal silicate solution to yield a liquid having a density value in the range of 42.5 to 45.0 Baume degrees, said flocculent particles comprising an inorganic polysalt selected from the group consisting of borate salts of alkali-metal and ammonium cations and phosphate salts of alkali-metal and ammonium cations, an alkali-metal silicate selected from the group consisting of sodium silicate and potassium silicate, and water.

4,260,421

CEMENT PRODUCTION FROM COAL CONVERSION RESIDUES

Leo D. Brown, Baytown, Tex.; James M. Eakman, Morristown, N.J.; Nicholas C. Nahas, and LeRoy R. Clavenna, both of Baytown, Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 18, 1979, Ser. No. 41,271
Int. Cl.³ C04B *7/24*
U.S. Cl. 106—103 **10 Claims**

1. A process for the manufacture of cement which comprises:

(a) passing residue solids containing between about 20 weight percent and about 60 weight percent carbonaceous material with the remainder of said residue solids being inorganic ash constituents including calcium silicates and calcium aluminosilicates into a cement-making zone, said residue solids produced by (1) converting a solid carbonaceous feed material in the presence of an alkali metal-containing catalyst into liquids and/or gases thereby producing particles containing carbonaceous material, inorganic ash constituents and alkali metal residues and (2) treating said particles with a calcium-containing compound in the presence of water at a temperature between about 250° F. and about 700° F. to convert water-insoluble alkali metal constituents in said alkali metal residues into water-soluble alkali metal constituents; and

(b) combusting said carbonaceous material in said residue solids to supply at least a portion of the energy required to convert said residue solids into cement in said cement-making zone and wherein the presence of said calcium silicates and said calcium aluminosilicates decreases the amount of energy required to convert said residue solids into cement.

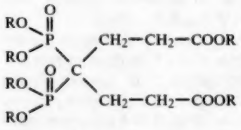
4,260,422

NOVEL PHOSPHONOCARBOXYLIC ACID COMPOUNDS

Horst-Dieter Thamm, Kelkheim; Volker Knittel, Wiesbaden; Werner Sommer, and Gerhard Weckler, both of Sulzbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 843,144, Oct. 17, 1977, abandoned.
This application Sep. 10, 1979, Ser. No. 73,653
Int. Cl.³ C04B *11/14*
U.S. Cl. 106—111 **3 Claims**

1. The method of retarding the setting of gypsum paste which comprises incorporating in gypsum paste from 0.06% to 0.09% by weight of a phosphonocarboxylic compound of the formula



wherein the radicals R are selected from hydrogen, alkali metal and ammonium.

4,260,423

KILN TAR BINDER AND METHOD OF PRODUCING IT

James L. Thomas, Hamilton Sq., N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Feb. 25, 1980, Ser. No. 124,053
Int. Cl.³ C08L *95/00*
U.S. Cl. 106—273 R **8 Claims**

1. A bituminous composition of matter prepared by heating and air blowing quenched kiln tar, recovered from a form coke kiln, with formaldehyde in the presence of a base at a temperature sufficient to dehydrate the tar and continuing the heating and air blowing until the Ring and Ball melt viscosity reaches at least about 58° C.

4,260,424

METHOD FOR PREPARING A PIGMENT COMPOSITION

Naoji Mizoguchi; Eiichi Takama, and Kazuo Kaneko, all of Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Filed Aug. 17, 1979, Ser. No. 67,376
Claims priority, application Japan, Aug. 28, 1978, 53/103823
Int. Cl.³ C08J *3/20*
U.S. Cl. 106—309 **8 Claims**

1. A method for preparing a resinous pigment composition comprising:

charging pigment, water and water-insoluble resin which is solid at room temperature into a mill containing a dispersing medium without any additive which would cause said resin to dissolve or swell; and,

milling the charge at a temperature below the softening point of the resin to reduce the pigment to a fine powder and to disperse it uniformly throughout the resin.

4,260,425

PHOSPHORUS REMOVAL FROM SURFACE REGIONS OF PHOSPHOSILICATE GLASS MICROCIRCUIT LAYERS

Ralph P. Ulrich, and Deborah W. Hewitt, both of Beaverton, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Apr. 4, 1979, Ser. No. 26,845
Int. Cl.³ B05D *3/04*
U.S. Cl. 134—2 **13 Claims**

1. A method for treating a phosphorus-containing silicon oxide glass layer to render uncovered surface regions thereof substantially noncorrosive to metal, comprising the steps of:

exposing said uncovered regions of the glass layer to a humid atmosphere for a time sufficient to hydrate substantially all of the available phosphorus within said regions, and

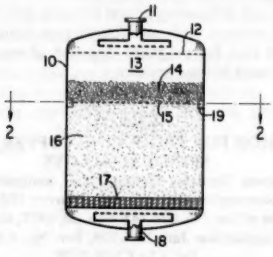
removing resultant acidic hydration products by rinsing said surface regions with water.

4,260,426

ENVIRONMENTAL FILTERS

Daniel H. Werfelman, Mokena, Ill., assignor to CPC International Inc., Englewood Cliffs, N.J.

Filed Nov. 13, 1979, Ser. No. 93,419
Int. Cl.³ B01D *33/30*
U.S. Cl. 134—29 **4 Claims**



1. Apparatus for filtering liquids comprising a vertical housing provided with upper inlet and lower outlet means, a bed provided within said housing having multiple filter medias separated by horizontal media separators, said separators being provided with multiple spaced guide means disposed in close proximity to the outer periphery of said separators and multiple cooperating guide means spaced around the inner wall of said housing whereby said separators are positioned in guided, vertical sliding relation to said housing, a free board zone in the upper interior portion of said housing and a screening means provided across said upper inlet means.

4. A method of regenerating the apparatus of claim 1 comprising the sequential steps of:

(a) backwashing with air;

(b) backwashing with caustic at a pH of about 14;

(c) backwashing with air; and

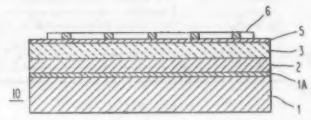
(d) backwashing with water.

4,260,427

CdTe SCHOTTKY BARRIER PHOTOVOLTAIC CELL

Gabor F. Fulop, King of Prussia; Jacob F. Betz, Quakertown; Peter V. Meyers, Coopersburg, and Mitchell E. Doty, Chalfont, all of Pa., assignors to Ametek, Inc., Paoli, Pa.

Filed Jun. 18, 1979, Ser. No. 49,728
Int. Cl.³ H01L *31/04*
U.S. Cl. 136—255 **24 Claims**



1. In a photovoltaic cell comprising (a) a cadmium telluride film, (b) a barrier layer facing and in intimate contact with one side of said film with a rectifying junction at the interface therebetween and (c) a conductive layer facing and in intimate contact with the other side of said film with an ohmic junction at the interface therebetween, the improvement comprising:

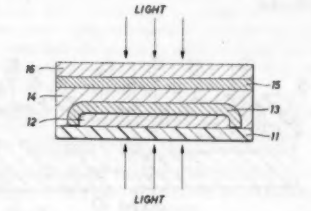
said film being relatively cadmium-rich at said ohmic junction interface.

4,260,428

PHOTOVOLTAIC CELL

Pradip K. Roy, Wilmington, Del., assignor to Ses, Incorporated, Newark, Del.

Filed Mar. 5, 1980, Ser. No. 127,358
Int. Cl.³ H01L *31/04*
U.S. Cl. 136—260 **16 Claims**



1. An improved photovoltaic cell comprising: an electrically conductive first electrode

a first film of cadmium sulfide in ohmic contact with said electrode;

a second film of cuprous sulfide in contact with said cadmium sulfide film and forming a p-n junction therewith;

a third film in contact with said cuprous sulfide film and selected from the group consisting of a film comprising chromium, a film comprising chromium having deposited thereon a film comprising copper, a film comprising copper having deposited thereon a film comprising chromium and a film comprising an admixture of chromium and copper and;

an electrically conductive second electrode in ohmic contact with said third film.

4,260,429

ELECTRODE FOR PHOTOVOLTAIC CELL

Richard L. Moyer, Newark, Del., assignor to Ses, Incorporated, Newark, Del.

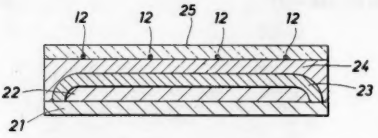
Continuation of Ser. No. 68,791, Aug. 22, 1979, abandoned. This application May 19, 1980, Ser. No. 150,857
Int. Cl.³ H01L *31/04*
U.S. Cl. 136—256 **44 Claims**

1. A photovoltaic cell comprising:

(a) an electrically conductive first electrode;

(b) a film of a first semiconductor material of one type conductivity covering at least a portion of said first electrode;

(c) a film of a second semiconductor material of opposite type conductivity overlying and forming a p-n junction with the first semiconductor material; and



(d) a second electrode, in ohmic contact with said second semiconductor material and which allows radiant energy to pass into the second semiconductor material, said second electrode comprising one or more electrically conductive metal wires coated with a solid polymer containing electrically conductive particles.

4,260,430

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

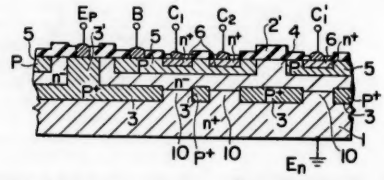
Kazuo Itoh, Kodaira; Katsumi Ogiue, Hinode, and Akio Hayasaka, Yamato, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

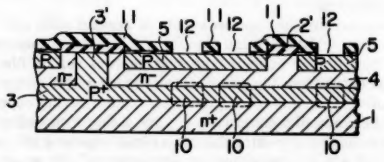
Division of Ser. No. 852,978, Nov. 18, 1977, which is a continuation of Ser. No. 608,734, Aug. 28, 1975, abandoned. This application Jun. 20, 1979, Ser. No. 50,202

Claims priority, application Japan, Sep. 6, 1974, 49-102100

Int. Cl.³ H01L *21/263, 7/36*

U.S. Cl. 148—1.5 **5 Claims**





1. A method of manufacturing a semiconductor device including the steps of:

(a) preparing a semiconductor body including a first semiconductor layer of a first conductivity type;

(b) forming a second semiconductor layer of said first conductivity type having an impurity concentration that is lower than that of said first semiconductor layer on said first semiconductor layer;

(c) forming a first semiconductor region having a second conductivity type opposite to that of said first conductivity type in said first semiconductor layer, to serve as the base region of a transistor;

(d) forming a second semiconductor region having said first conductivity type in said first semiconductor region to serve as the collector region of said transistor;

(e) introducing an impurity having said first conductivity type into said second semiconductor layer between said first semiconductor layer and said first semiconductor region and under said second semiconductor region to form a third semiconductor region that has an impurity concentration which is higher than that of said second semiconductor layer and to serve as the emitter region of said transistor.

4,260,431

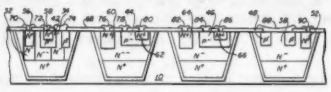
METHOD OF MAKING SCHOTTKY BARRIER DIODE BY ION IMPLANTATION AND IMPURITY DIFFUSION

Leo R. Piotrowski, Indian Harbour Beach, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Dec. 21, 1979, Ser. No. 106,128

Int. Cl.³ H01L *29/90;* **B01J** *7/00, 17/00*

U.S. Cl. 148—1.5 **9 Claims**



1. A method of fabricating a Schottky barrier diode in an N conductivity type substrate having a bulk resistance in the range of 3 to 20 ohm-centimeters comprising:

ion implanting and diffusing N conductivity type impurities into said substrate to form a first deep N-type region in said substrate having a surface impurity concentration the order of magnitude of 10^{16} carriers per cubic centimeter;

selectively diffusing P conductivity type impurities into said first N-type region to form P-type guard ring having a depth less than the depth of said first deep N-type region;

diffusing N conductivity type impurities into said first N-type region exterior said P-type guard ring to form a second N-type region of greater impurity concentration than said first N-type region; and

applying and delineating a layer of metal to form a Schottky barrier contact with said first N-type region in the area interior said P-type guard ring and ohmic contact with said second N-type region.

4,260,432

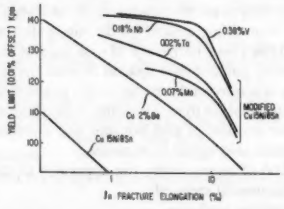
METHOD FOR PRODUCING COPPER BASED SPINODAL ALLOYS

John T. Plewes, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 838,141, Sep. 30, 1977, abandoned. This application Jan. 10, 1979, Ser. No. 6,616

Int. Cl.³ C22F *1/08*

U.S. Cl. 148—2 **8 Claims**



1. A method for manufacturing a body of a predominantly spinodal alloy by a treatment of an initial body which, in an amount of at least 95 percent by weight, consists of Cu, Ni, Sn,

and at least one additional element, Ni being present in said alloy in an amount of from 3–20 weight percent, Sn being present in said alloy in an amount of from 3.5–10 weight percent at 3 percent Ni to from 3.5–12 weight percent at 20 percent Ni, and characterized in that (1) said additional element is selected from the group consisting of Mo in an amount of 0.02–0.07 weight percent at 3 percent Ni to 0.05–0.1 weigh• percent at 20 percent Ni, Nb in an amount of 0.05–0.3 weigh. percent at 3 percent Ni to 0.08–0.35 weight percent at 20 percent Ni, Ta in an amount of 0.02–0.1 weight percent at 3 percent Ni to 0.05–0.3 weight percent at 20 percent Ni, V in an amount of 0.1–0.5 weight percent at 3 percent Ni to 0.2–0.5 weight percent at 20 percent Ni, and Fe in an amount of 1–5 weight percent at 3 percent Ni to 2–7 weight percent at 20 percent Ni, and (2) said treatment comprises the steps, carried out in the order stated, of (a) short term, low temperature annealing to form a solid solution of the Cu-Ni-Sn component of said alloy and to precipitate said additional element, (b) rapid quenching, (c) cold working in an amount of less than 25 percent area reduction, and (d) aging.

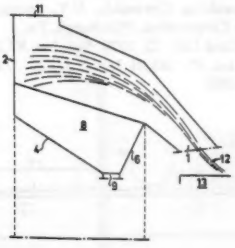
6. Method of claim 1 in which said additional element is selected from the group consisting of Mo, Nb, Ta, and V and in which said initial body is cast from a final melt which is prepared by providing a first melt of constituent elements Cu and Ni, placing a cover of dry graphite on said first melt, bubbling an inert gas through said first melt, adding constituent element Sn to said first melt to obtain a second melt of Cu, Ni, and Sn, adding to said second melt an amount of Mn in the range of from 0.1 to 0.3 weight percent and an amount of Mg in the range of from 0.05 to 0.1 weight percent to obtain a third melt, and plunging into said third melt a fourth constituent element selected from said group to obtain said final melt.

4,260,433

METHOD OF FORMING AND COLLECTING SLAG PRODUCTS FORMED AT A MELTING PROCESS, ESPECIALLY AT GAS PLANING

Bengt A. Johansson, Skärhamn; Ake K. Nyvall, Kungälv, and Frank G. Jonsson, Hisingsbacka, all of Sweden, assignors to Centro-Maskin Göteborg AB, Göteborg, Sweden

Filed Nov. 22, 1978, Ser. No. 963,121
Claims priority, application Sweden, Nov. 24, 1977, 7713300
Int. Cl.³ B23K *7/00*
U.S. Cl. 148—9.5 **3 Claims**



1. In a gas planing process wherein the melt formed during the planing operation is converted to slag products and collected during the process, the improvement comprising:

transporting the melt formed during the gas planing process by means of a forced air stream containing an amount of oxygen in excess of that which is required for the gas planing process;

causing said melt to travel over a sufficient distance prior to being collected such that the melt is oxidized; and

thereafter collecting the oxidized melt as discrete particles of slag product.

4,260,434
Patent Not Issued For This Number

4,260,435

COPPER-NICKEL-SILICON-CHROMIUM ALLOY HAVING IMPROVED ELECTRICAL CONDUCTIVITY

Walter W. Edens, Hartland, and Quentin F. Ingerson, Wauwatosa, both of Wis., assignors to Ampco-Pittsburgh Corporation, Milwaukee, Wis.

Division of Ser. No. 11,110, Feb. 12, 1979, Pat. No. 4,191,601. This application Jul. 2, 1979, Ser. No. 54,293
Int. Cl.³ C21D *1/00*; C22F *1/08*
U.S. Cl. 148—32.5 **2 Claims**

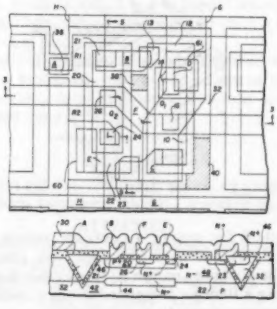
1. A precipitation hardened copper base alloy, consisting essentially by weight of 2.0% to 3.0% of a metal selected from the group consisting of nickel, cobalt, and mixtures thereof, 0.4% to 0.8% silicon, 0.1% to 0.5% chromium, and the balance copper, said silicon being present in an amount in excess of the stoichiometric amount necessary to form silicides of said metal, and said chromium being present in excess of the stoichiometric amount required to form chromium silicide with the excess silicon not combined as said metal silicides, said alloy having a metallographic structure composed of a copper matrix containing precipitated silicides of said metal, precipitated chromium silicide and precipitated particles of elemental chromium, said matrix being substantially completely free of silicon and said metal and chromium in solid solution, said alloy having an electrical conductivity in excess of 45% of pure copper and a hardness greater than 90 Rockwell B.

4,260,436

FABRICATION OF MOAT RESISTOR RAM CELL UTILIZING POLYCRYSTALLINE DEPOSITION AND ETCHING

David L. Taylor, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Division of Ser. No. 953,137, Oct. 20, 1978. This application Feb. 19, 1980, Ser. No. 122,778
Int. Cl.³ H01L *21/20, 21/302*
U.S. Cl. 148—174 **11 Claims**



1. A method of fabricating moat resistors in an integrated circuit comprising:

forming moats in a surface of a doped semiconductor material substrate;
forming a layer of dielectric insulation in said moats;
filling said moats with doped polycrystalline semiconductor material; and
removing portions of said doped polycrystalline material in said moat to form distinct doped polycrystalline resistors in said moats, said dielectric isolation isolating said resistors from said substrate and laterally isolating surface regions of said substrate from each other.

4,260,437

STABILIZERS FOR SOLID PROPELLANT BINDERS

Toshio W. Nakagawa, San Jose, and Thomas P. Rudy, Saratoga, both of Calif., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 539,209, Jan. 7, 1975, abandoned, which is a continuation of Ser. No. 325,275, Jan. 22, 1973, abandoned. This application May 4, 1979, Ser. No. 36,129
Int. Cl.[3] C06B *45/10*
U.S. Cl. 149—19.9 **18 Claims**

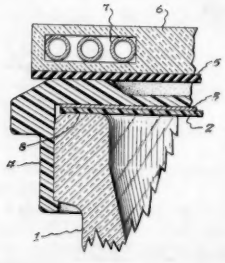
1. A composition of matter comprising:
(a) a liquid crosslinkable polymeric system selected from the group consisting of hydroxyterminated polybutadiene, carboxyterminated polybutadiene, and polybutadiene-acrylic acid-acrylonitrile polymers, the cure time of which is decreased by the presence of materials containing elements selected from the group consisting of copper and iron; and
(b) a chelating agent for said elements dissolved in said polymeric system which chelating agent is non-reactive with said polymeric system in the amounts present, capable of forming a stable chelate with said elements in which the valence of the metal ion is fixed, and is a condensation product of salicylaldehyde and a material selected from the group consisting of o-aminophenol, o-amino-p-nonylphenol, ethylenediamine, 1,2-propylenediamine and tetrakis(aminomethyl)methane.

4,260,438

PREPARATION OF GLASS CONTAINER FOR THERMOPLASTIC CLOSURE

Michael T. Dembicki, and William J. Poad, both of Brockport, Pa., assignors to Brockway Glass Company, Inc., Brockway, Pa.

Filed Oct. 19, 1979, Ser. No. 86,398
Int. Cl.[3] B67B *3/00*; B32B *17/10*; C03C *15/00, 21/00*
U.S. Cl. 156—69 **15 Claims**



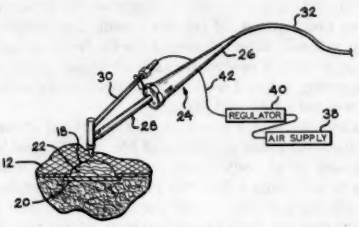
1. A method for sealing a container mouth, said mouth consisting of glass and having an upper rim, comprising:
heating the container mouth to an elevated temperature,
introducing a fluorine compound decomposable at said elevated temperature adjacent said rim,
pressing a membrane comprising a thermoplastic material against said rim at a temperature above the softening point but below the melting point of said thermoplastic, whereby the membrane is securely adhered to the rim.

4,260,439

APPARATUS AND METHOD FOR REPAIRING PLASTIC MATERIALS

Lawrence L. Speer, Wadsworth, Ohio, assignor to Repair-It Industries, Inc., Barberton, Ohio

Filed Feb. 5, 1979, Ser. No. 9,346
Int. Cl.[3] B32B *35/00*; B29C *23/00*
U.S. Cl. 156—98 **1 Claim**



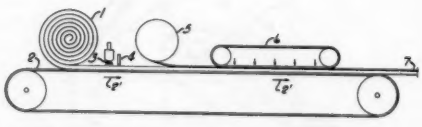
1. A method of repairing plastic material comprising the steps of:
trimming away damaged plastic material to form a patch area,
providing a heat curable plastic patching compound,
substantially filling said patch area of such plastic material with such patching compound in one application,
providing a flow of air at approximately one psi to a heating tool,
heating such air in such tool to a temperature sufficient to cure such patching compound,
exhausting such air from such tool through an orifice having a diameter of less than 0.1 inches, and
directing such heated air to such patching compound until such compound has substantially cured.

4,260,440

METHOD OF MANUFACTURING A HEAT REFLECTIVE MATTRESS PAD

Carl R. Frankenberg, Oceanside, N.Y., assignor to American Foam Latex Corporation, Pittsburgh, Pa.

Filed Oct. 22, 1979, Ser. No. 87,248
Int. Cl.[3] B32B *31/12, 31/20, 5/18*
U.S. Cl. 156—163 **3 Claims**



1. The method of manufacturing a mattress pad comprising the steps of uniformly applying a liquid adhesive to the upper surface of an elastomer foam pad, applying the underside of a porous fabric having a porous aluminum silicone coating on the top side thereof to the adhesive-coated side of said foam pad, uniformly compressing said pad and applied coated fabric together under pressure and with heat for sufficient time to dry the adhesive.

4,260,441

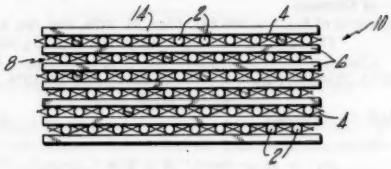
QUICK BOND COMPOSITE AND PROCESS

Karl M. Prewo, Vernon, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 751,576, Dec. 12, 1976, abandoned. This application May 10, 1978, Ser. No. 904,709

Int. Cl.[2] **B23K** *31/02*

U.S. Cl. 156—166 **2 Claims**



1. In the manufacture of a composite structure in air, the structure consisting of an aluminum matrix with a plurality of layers of high strength filaments therein, the steps of:

forming a mat consisting of a single layer of collimated spaced uncoated filaments held in mat form only by spaced aluminum crosswires interwoven with said filaments,

assembling a plurality of these mats with interleaved aluminum sheets to form a stack, there being one foil sheet between adjacent mats, and

densifying and bonding the stack of sheets and mats by heating in air to a temperature nearly the liquidus temperature of aluminum and compressing and compacting the stack to form a composite with the crosswires becoming a part of the aluminum matrix of the foils and with the foils on opposite sides of each tape of fibers brought into contact with one another between the fibers and bonded together to form the matrix.

4,260,442

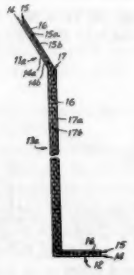
METHOD FOR MAKING AN IMPROVED VARIABLE FLUTE CONTAINER

Mack L. Ford, Westerville, and William W. McFarland, Wooster, both of Ohio, assignors to International Paper Company, New York, N.Y.

Division of Ser. No. 943,772, Sep. 20, 1978, Pat. No. 4,177,936, which is a continuation of Ser. No. 803,970, Jun. 6, 1977, abandoned. This application Jun. 1, 1979, Ser. No. 44,417

Int. Cl.[3] **B31F** *1/22, 1/32*

U.S. Cl. 156—207 **4 Claims**



1. In a method of reinforcing a corrugated web comprising the steps of forming a fluting medium from a web of flat paperboard and

forming at least one of a first material layer consisting of in combination a single face liner and a fluting medium attached thereto, the improvement comprising:

forming at least one of a second material layer consisting of in combination a single face liner and a fluting medium attached thereto, said second material layer having a dimension in the cross machine direction of less than that of said first material layer, said difference in dimension between said first and said second material layers being equal to that portion of said first material layer forming at least one of the top portion and bottom portion of a container formed from said reinforced corrugated web; and

forming a combination consisting of said first material layers and said second material layers, said combination having no single face liner in contact with another single face liner and no fluting medium in contact with another fluting medium; and

capping the sole remaining uncovered fluting medium of said combination with a double faced liner.

3. The method of claim **1** including the further step of cutting said web in a cross-machine direction to form a blank.

4. The method of claim **1** including the step of slotting and creasing the web parallel to the corrugations.

4,260,443

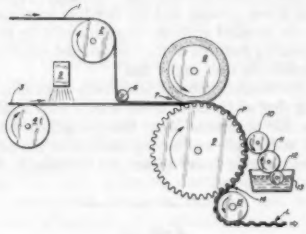
LAMINATED ABSORBENT PROCESS

William F. Lindsay; Robert A. Meintrup, both of Muscatine, Iowa, and Howard J. Slawny, Green Bay, Wis., assignors to Grain Processing Corporation, Muscatine, Iowa

Filed Oct. 20, 1978, Ser. No. 953,039

Int. Cl.[3] **B32B** *31/00*

U.S. Cl. 156—220 **4 Claims**



1. A process for producing a liquid absorbing laminated structure which comprises:

(a) distributing in dry form onto a first sheet a liquid absorbing material which when moistened with water exhibits adhesive properties,

(b) superimposing a second water-permeable sheet on said first sheet,

(c) applying water at spaced points to said second sheet to moisten said liquid absorbing agent and cause it to serve as an adhesive at said points, and

(d) then applying pressure to force together said sheets whereby a laminated structure is produced having the water absorbing agent distributed therein in substantially immobilized condition.

4,260,444

METHOD OF PRODUCING FREE-STANDING NEWSPAPER INSERTS WITH A TISSUE SAMPLE ATTACHED

Eugene W. Fowler, Sun City, Ariz., assignor to Gene Fowler and Friends, Inc., Sun City, Ariz.

Filed May 14, 1979, Ser. No. 38,924

Int. Cl.[3] **B65D** *75/26*

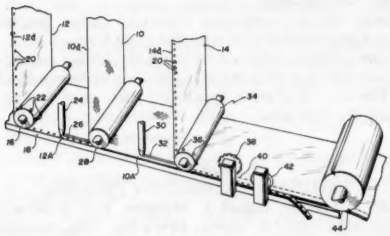
U.S. Cl. 156—252 **9 Claims**

1. A method of producing an advertising insert for newspapers, the advertising insert including a sample sheet of a thin,

absorbent paper tissue attached along a stub edge between front and back cover sheets, the method comprising:

supplying, along a path, a first cover ribbon of printed cover paper, a second cover ribbon of printed cover paper, and a sample ribbon of the thin absorbent paper tissue with their stub edges closely spaced and essentially parallel to one another; wherein the first and second cover ribbons have line holes at longitudinally spaced locations proximate their stub edges;

bonding the first and second cover ribbons and the sample ribbon longitudinally proximate their stub edges with the sample ribbon between the first and second cover ribbons so that each ribbon is attached to at least one of the other ribbons; and wherein bonding the first and second cover



ribbons and the sample ribbon longitudinally proximate their stub edges is at a location spaced from the stub edges of the first and second cover ribbons such that the line holes are located between the stub edges of the first and second cover ribbons and the bonding location;

cutting the bonded ribbons longitudinally to remove line hole bearing portions of the first and second cover ribbons proximate the stub edges; and

cutting the bonded ribbon transversely to produce an insert having first and second cover sheets with a sample sheet of the thin absorbent paper tissue attached therebetween at the stub edge, and having transverse cut edges of the first and second cover sheets and the sample sheet being essentially aligned.

4,260,445

PROCESS FOR PRODUCING THICK REINFORCED PLASTIC ARTICLES

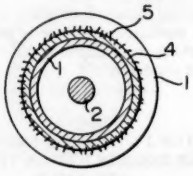
Masakatsu Mayumi, Osaka; Kenji Mitooka, and Sigeharu Fujiwara, both of Okayama, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Japan

Filed Aug. 8, 1978, Ser. No. 931,915

Claims priority, application Japan, Aug. 9, 1977, 52-95730

Int. Cl.³ B32B *31/00*

U.S. Cl. 156—276 **7 Claims**



1. A process for producing a thick reinforced plastic article by laminating unit layers of a molding material composed of a thermosetting resin and a reinforcing material, which comprises scattering fibers on the surface of an earlier disposed unit layer while it is in the uncured state, then curing the unit layer whereby at least a portion of the fibers have exposed free ends, and laminating a second layer which is in the uncured state, on the cured unit layer and then curing said second layer, whereby said free ends become fixed within said second layer.

4,260,446

METHOD AND APPARATUS FOR PRODUCING A COLLAPSIBLY FOLDABLE PACKAGING SLEEVE HAVING A POLYGONAL CROSS-SECTION

Franz J. Saul, Guerzenicher Strasse 61, 5160 Dueren, Fed. Rep. of Germany

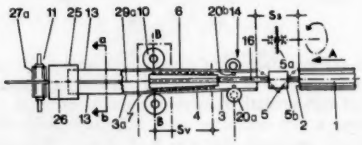
Division of Ser. No. 669,841, Mar. 24, 1976, Pat. No. 4,124,426.

This application Aug. 4, 1978, Ser. No. 931,262

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1975, 2538866; Mar. 25, 1975, 2538867; Jan. 19, 1976, 2601723

Int. Cl.³ B31F *1/00*

U.S. Cl. 156—443 **31 Claims**



1. An apparatus for producing foldably collapsible sleeves of polygonal cross-section comprising a stationary wrapping mandrel upon which thin strips of material may be wrapped to form sleeve stock and which forms a mandrel for coaxially receiving said sleeve and which progressively urges said sleeve into the desired polygonal configuration by enlarging its cross-sectional area, wherein said mandrel for polygonally shaping said sleeve is equipped with at least two diametrically opposite rows of grooving rollers, the projected center planes of which intersect the axis of the mandrel and each of which has an edge for impressing into the sleeve wall; said grooving rollers diverging outwards in sequence from the starting end of said polygonally shaping mandrel until they reach a relative radial spacing corresponding approximately to the interior diagonal lines of the desired polygonal cross-section, said mandrel for polygonally shaping said sleeve as well as said wrapping mandrel being stationary, and said apparatus also including, intermediate said wrapping mandrel and said shaping mandrel, a severing means for cutting partial sections from said sleeve stock, and a separate driving means for causing said severed partial sections to move independently of said stock.

4,260,447

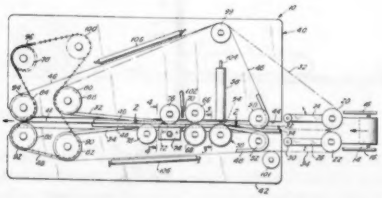
CONTINUOUS BAG SEALING MACHINE

Tullio Muscariello, Elmsford, N.Y., assignor to Save-O-Seal, Elmsford, N.Y.

Filed Apr. 20, 1979, Ser. No. 31,980

Int. Cl.³ B32B *31/20*

U.S. Cl. 156—494 **12 Claims**



1. A continuous sealing machine for a heat sealable bag comprising:

(a) means for transporting said bag to be sealed;

(b) means for engaging said bag proximate to the portion of

said bag which is to be sealed to hold the layers of said bag to be sealed together;

(c) means for heating said bag along a line thereof, said line being located at the layers held together;

(d) and pulley means for stretching said bag along said line simultaneously with said heating, said pulley means having a flange extending from the periphery thereof into engagement with said bag along said line to be sealed to fuse said layers together and thereby seal said bag.

4,260,448

PROCESS FOR DECREASING CRYSTAL DAMAGES IN THE PRODUCTION OF N-DOPED SILICON BY NEUTRON BOMBARDMENT

Heinz Herzer, Burghausen, Fed. Rep. of Germany, assignor to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Filed Mar. 23, 1978, Ser. No. 889,172

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1977, 2753488

Int. Cl.³ C30B *31/20*

U.S. Cl. 156—605 **6 Claims**

1. A process for the production of n-doped silicon with minimal crystal damage caused by neutron bombardment, in which phosphorus atoms are formed from silicon by nuclear transmutation, wherein the number of desired phosphorus atoms N_{31P} per cc can be calculated by the known equation

$$N_{31P}=N_{30Si}\cdot\sigma\cdot\phi\cdot t$$

in which N_{30Si} is the number of ^{30}Si-isotopes per cc, $\sigma=0.13$ barn effective cross-section, ϕ the flux density of the thermal neutrons per cm^2 and t the bombardment time in seconds, the process comprising the step of adjusting the ratio of thermal to fast neutrons in a neutron flux comprising both thermal and fast neutrons, acting upon the bombarded silicon, so that the higher the desired electrical resistivity of the bombarded silicon and thus the lower the number of N_{31P} the higher the ratio of thermal to fast neutrons, and wherein with a number of desired phosphorus atoms N_{31P} per cc of less than 5×10^{13} corresponding to a desired electrical resistivity of more than 100 Ω cm, the ratio of thermal to fast neutrons is adjusted to greater than 1000 and with a number of the desired phosphorus atoms N_{31P} per cc of 5×10^{13} to 1×10^{14}, the ratio of thermal to fast neutrons is adjusted to greater than 10.

4,260,449

METHOD OF FORMING A PRINTED CIRCUIT

Betty L. Berdan, and Betty M. Luce, both of Willowick, Ohio, assignors to Gould Inc., Rolling Meadows, Ill.

Division of Ser. No. 863,109, Dec. 22, 1977, Pat. No. 4,190,474. This application Sep. 19, 1979, Ser. No. 77,465

Int. Cl.³ B44C *1/22*

U.S. Cl. 156—628 **6 Claims**

1. A method of forming a printed circuit comprising:

providing a resinous substrate,

bonding a composite metal structure to said substrate, said metal structure including a layer of copper foil having opposed first and second surfaces and a thin layer of nickel having opposed first and second surfaces with one of said surfaces of said copper foil being bonded to one of said surfaces of said nickel layer and the opposite opposed surface of said nickel layer being bonded to said resinous substrate, said nickel layer containing an effective amount of sulfur to render said copper foil and said nickel barrier layer mutually etchable, and

etching said circuit into said composite metal structure by means of an etchant which mutually dissolves selected portions of said copper foil and said nickel barrier layer.

4,260,450

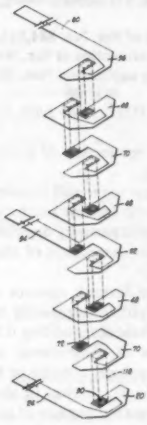
METHOD OF FABRICATION FOR THIN FILM MAGNETIC TRANSDUCERS

William F. Neu, Oklahoma City, Okla., assignor to Magnex Corporation, San Jose, Calif.

Filed Jan. 15, 1979, Ser. No. 3,380

Int. Cl.³ G11B *5/20, 5/42*

U.S. Cl. 156—656 **5 Claims**



1. A method of forming a thin film inductive magnetic transducer of the type having multi-layer conductive elements disposed adjacent a pole piece, comprising the steps of:

depositing, in insulative isolation, and patterning and etching, all odd layer conductive elements to expose an inter-layer electrical contact window that is in a first superposed alignment through said transducer; and

depositing, in insulated isolation, and patterning and etching, at least two even layer conductive elements to expose on each an inter-layer electrical contact window that is in second superposed alignment through said transducer, said second alignment being spaced from said first alignment;

so that connection of all odd to even deposition layers are in a first superposed alignment, and connection of all even to odd deposition layers are in a second superposed alignment.

2. A method as set forth in claim 1 which further comprises: forming external contact elements on said first and last deposited conductive elements.

3. A method as set forth in claim 2 which further comprises: forming an external center tap contact element in conductive communication with the inductive center electrical contact window of said conductive elements.

4,260,451

METHOD OF REWORKING SUBSTRATES, AND SOLUTIONS FOR USE THEREIN

Arnold F. Schmeckenbecher, Poughkeepsie, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Mar. 17, 1980, Ser. No. 130,669

Int. Cl.³ C23F *1/00*

U.S. Cl. 156—664 **10 Claims**

1. A solution for dissolving noble metal alloys which include Sn from substrates in presence of refractory metal which must be retained on the substrate consisting essentially of (1) KI in an amount of at least 0.3 moles/liter, (2) I_2 in an amount of at least 0.195 moles/liter, and (3) halogen ions selected from the group consisting of chloride and bromide ions in an amount of at least 0.3 moles/liter.

4,260,452
PRODUCTION OF PAPER PULP FROM SUGAR MILL BAGASSE

Horst Krüger, Martinstr. 42, 61 Darmstadt; Wilhelm Berndt, Bertha-v.Suttner-Ring 11a, 6 Frankfurt am Main; Ursula Schwartzkopff, Hörsteiner Str. 13, 8752 Kleinostheim; Franz J. Reitter, Grovestr. 13, 8 Munich 50; Theodor Höpner, Harlinger Str. 6, 29 Oldenburg in Oldenburg, and Hans-Joachim Mühlig, Aschaffstr. 48, 875 Aschaffenburg, all of Fed. Rep. of Germany

Continuation-in-part of Ser. No. 884,513, Mar. 8, 1978, abandoned, which is a continuation of Ser. No. 685,326, May 11, 1976, abandoned. This application Nov. 24, 1978, Ser. No. 963,706

Int. Cl.[3] **D21C** *1/00, 3/00, 3/04*

U.S. Cl. 162—23 **15 Claims**

1. A process for the production of paper pulp from sugar mill bagasse comprising:

(a) moist depithing raw sugar mill bagasse to remove up to about 66% of the pith content and leave residual pith;

(b) wet bulk storing said partially depithed bagasse;

(c) forming a aqueous suspension of the stored, partially depithed bagasse;

(d) wet depithing the formed aqueous suspension of the stored, partially depithed bagasse by hydraulic shearing thereof while simultaneously adding 0.5–10 parts per 100 parts of suspension of a carbonate, sulfite, hydroxide, phosphate, polyphosphate, chlorite or hypochlorite of an alkali metal, magnesium, calcium or aluminum;

(e) pulping the wet depithed bagasse of step (d) by a neutral sulfite semi-chemical process or thermo-mechanical defibration;

(f) mechanically pulping the product of step (e); and

(g) washing, screening, cleaning and dewatering the pulp produced in step (f).

8. In a process for the production of paper pulp from sugar mill bagasse which comprises wet bulk storing partially depithed bagasse, the improvement which comprises treating the partially depithed bagasse in wet bulk storage with an amount of a carbonate, phosphate, polyphosphate, sulfite, chlorite or hypochlorite of an alkali metal, magnesium, calcium or aluminum effective to preserve the partially depithed bagasse, and further treating the partially depithed bagasse in wet bulk storage with a second preservative, selected from the group consisting of an amount of (a) a $C_{1\text{-}5}$ aliphatic acid; (b) a $C_{1\text{-}5}$ aliphatic acid substituted by amino or halogen; (c) a $C_{1\text{-}6}$ hydroxy acid; (d) an alkali metal, Al or aluminum phosphate salt of (a), (b) or (c); and (e) an amide of (a), (b) or (c), to preserve the partially depithed bagasse.

4,260,453
POLYMER-BONDED CROCIDOLITE ASBESTOS DIAPHRAGMS AND METHOD FOR FORMING SAME

Richard A. Hanmer, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 27, 1979, Ser. No. 70,182

Int. Cl.[3] **C25B** *13/06*

U.S. Cl. 162—105 **11 Claims**

1. A method for preparing a polymer-bonded crocidolite asbestos sheet material, said method comprising,

preparing an aqueous mixture consisting essentially of crocidolite asbestos fibers and fine particle size fluoropolymer with enough acid added to attain a pH of about 2 or lower,

forming and de-watering the slurried materials into the desired sheet structure, and

heat-bonding the sheet structure by applying sufficient heat to heat-plastify, fuse, or sinter the fluoropolymer.

11. The heat-bonded sheet material prepared according to claim 1.

4,260,454
PRECIPITATED SILICEOUS PRODUCTS USED IN PAPER

Satish K. Wason, and Robert K. Mays, both of Havre de Grace, Md., assignors to J. M. Huber Corporation, Locust, N.J.

Continuation of Ser. No. 797,270, May 16, 1977, abandoned, which is a division of Ser. No. 557,707, Mar. 12, 1975, abandoned. This application Oct. 10, 1978, Ser. No. 949,720

Int. Cl.[3] **D21H** *3/66*

U.S. Cl. 162—181 C **1 Claim**

1. A paper product having improved brightness, opacity, print quality, and strike-through reduction; said paper product including, as a filler, a finely divided, amorphous, precipitated silicon dioxide having:

(a) a wet cake moisture content of from about 79.8 to 83.5%;

(b) a structure index of from about 395 to 505;

(c) an oil absorption of from about 190 to 202 cc/100 grams;

(d) a void volume of from about 3.55 to 4.14 cc Hg/g SiO_2;

(e) a BET surface area of from about 120 to 153 m^2/g; and

(f) a percent friability of from about 20 to 98%; said silicon dioxide being produced by the following steps:

(1) introducing a known value of an aqueous alkali metal silicate solution into a reaction vessel; said alkali metal silicate having the formula $M_2O(SiO_2)X$, wherein M is an alkali metal selected from the group consisting of sodium and potassium, and X is from 2 to 4 inclusive;

(2) continuously agitating said aqueous solution of said alkali metal silicate in said reaction vessel;

(3) contacting said alkali metal silicate solution with an acid to form an aqueous suspension of finely divided precipitated silicon dioxide particulates;

(4) continuing the addition of said acid until the precipitation of said silicon dioxide is at least 99% complete;

(5) introducing a second solution of an aqueous alkali metal silicate into said reaction vessel containing said finely divided precipitated silicon dioxide;

(6) contacting the reaction mass formed by step (5) with an acid, said acid being added in an amount theoretically required to react with the silicate of said second aqueous solution of said alkali metal silicate;

(7) filtering the reaction mass thus formed; and

(8) washing, drying, and recovering the resulting silicon dioxide.

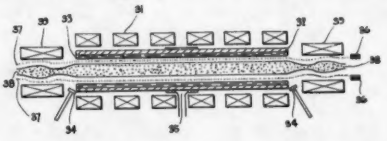
4,260,455
MIRROR PLASMA APPARATUS

Ralph W. Moir, Livermore, Calif., assignor to The United States of America as represented by the Unites States Department of Energy, Washington, D.C.

Filed Mar. 14, 1978, Ser. No. 886,370

Int. Cl.[3] **G21B** *1/00*

U.S. Cl. 176—9 **10 Claims**



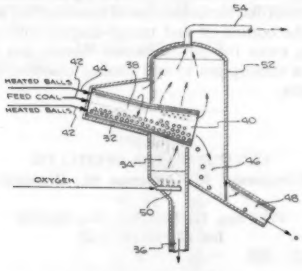
1. In a magnetic mirror confinement apparatus having a first solid material containment wall and means for generating and maintaining a longitudinally confined mirror plasma which extends longitudinally therein, the improvement comprising: means for protecting said first wall from neutron damage thereto utilizing a layer of liquid lithium; and means for shielding the confined mirror plasma from background neutrals together with the resultant loss of energy of the mirror plasma, and for protecting the mirror plasma from contamination by vapor from said lithium layer, said last-mentioned means consisting of a substantially longitudinally unconfined high density

blanket plasma generated by substantially all of an arc discharge output, said blanket plasma having a temperature not greater than 20 electron volts and which extends about the periphery of the mirror plasma and between the mirror plasma and said containment wall, said blanket plasma ionizes and takes up said lithium vapor whereupon the lithium ions flow with substantially all of the blanket plasma to a gas dump; said second mentioned means including means for maintaining a layer of liquid lithium against an inner surface of said wall, means for directing liquid lithium into and out of said wall, and means for rotating said wall with a velocity sufficient to keep said layer of liquid lithium against said inner surface of said wall.

4,260,456
SINGLE RETORT MANUFACTURING TECHNIQUE FOR PRODUCING VALUABLE CHAR AND GASES FROM COKE

Bernard L. Schulman, Golden, Colo., assignor to Tosco Corporation, Los Angeles, Calif.

Filed May 29, 1979, Ser. No. 43,023
Int. Cl.³ C10B *49/16*
U.S. Cl. 201—12 **9 Claims**



1. A method for efficiently producing char and valuable gases from coal comprising the steps of:

supplying dry feed coal particles to a multizone retort structure, contacting said feed coal with heat carrying solids to heat said feed coal to a temperature of from about 800 degrees F. to 1200 degrees F. in a carbonizing zone within said structure for a sufficient period of time to produce valuable gases from said coal feed and to produce carbonized char particles having a volatile matter content of about 5% to 25% by weight;

separating said heat carrying solids from said char particles;

feeding said carbonized char particles to a calcining zone in said retort structure;

forming a fluidized bed in said calcining zone by contacting said carbonized char particles with steam and an oxygen containing gas to heat said carbonized char to a temperature of about 1200 degrees F. to 1600 degrees F. for a sufficient length of time to produce valuable gases from said carbonized char particles and to produce a calcined char having a volatile matter content of less than about 7% by weight;

mixing said gases from said carbonizing zone and said calcining zone at a temperature in excess of about 950 degrees F. to prevent condensation of tars from said gas produced in said carbonizing zone;

drawing off said mixture of gases from said retort structure; and

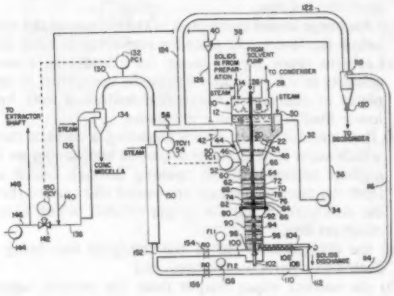
collecting substantially all of said calcined char from said fluidized bed calcining zone and directing said calcined char out of said retort structure;

whereby said feed coal particles are all subjected to substantially the same lower temperature carbonizing and higher temperature calcining steps to produce a relatively uniform char with low volatile matter content.

4,260,457
APPARATUS FOR CONTINUOUS AZEOTROPIC PROCESSING OF VEGETABLE AND PROTEIN MATERIAL

Roy W. Barns, P.O. Boc 215-B, R.R. 1, Broadway, Va. 22815

Continuation-in-part of Ser. No. 802,021, May 31, 1977, abandoned, which is a continuation of Ser. No. 550,157, Feb. 14, 1975, abandoned. This application Feb. 22, 1979, Ser. No. 14,090
Int. Cl.³ B01D *3/42*
U.S. Cl. 202—160 **14 Claims**



1. An azeotropic extraction assembly, comprising:

(a) an elongated vertical column having an upper dehydration section, an intermediate extraction section, and a lower liquid solvent stripping section,

(b) the extraction and stripping sections each having a series of vertically spaced perforate plate and rotating blade assemblies which act as dividers to divide the sections into superposed fluidized beds of oil containing solids,

(c) the dehydration section including a perforated top plate assembly which directly supports a layer of oil bearing solid feed material above which there is a turbulent liquid miscella pool of liquid solvent, extracted oil, and free water,

(d) solvent vapor supply means connected to the column immediately below the top plate of the dehydration section for supplying the major portion of solvent vapor to the column at a controlled rate,

(e) miscella discharge means disposed at the top of the dehydration section above the top plate and adjacent the area where the liquid miscella accumulates for removing the miscella from the column,

(f) a solvent vapor supply line connected to the bottom of the stripping section below the lowermost plate for supplying heated solvent vapor under elevated pressure to drive such vapors upwardly through the superposed fluidized beds of downwardly descending oil bearing solids to the top of the column, at a velocity which is higher than the minimum velocity to bring about a fluidized bed condition,

(g) solid discharge means connected to the bottom of the column below the lowermost plate for removing the de-oiled solids,

(h) sensing means associated with the column for obtaining information from the state of material in the column which is related to the azeotropic condition and amount of water in the unbound state at the dehydration section, and

(i) control means connected to the solvent vapor supply means and responsive to the sensing means for varying the vapor supplied to the dehydration section to increase or decrease the amount of vapor supplied to the dehydration section for removal of unbound water from the oil-bearing solids to thereby maintain a constant dehydration load on the lower part of the column.

5. An azeotropic extraction assembly, comprising:

(a) an elongated vertical column having a plurality of vertically spaced perforate plate and rotating blade assemblies

disposed therein which act as dividers to divide the column when loaded into superposed fluidized beds of oil-containing solids,

(b) a solvent vapor supply line connected to the bottom of the column below such plates for supplying heated solvent vapor under elevated pressure at a velocity sufficient to drive such vapors upwardly through the successive beds of oil-bearing solids to the top of the column to maintain the beds in a fluidized condition,

(c) miscella discharge means disposed at the top of the column above the uppermost of the plate assemblies and adjacent the miscella pool location for removing miscella from the column,

(d) discharge means connected to the bottom of the column below the lowermost plate for removing de-oiled solids,

(e) solvent vapor supply means for introducing a variable quantity of solvent vapor below the uppermost of the top plates to maintain a constant dehydration load for the lower fluidized beds of the column,

(f) flash desolventizing means including a conduit through which super heated vapor is passed and having an intermediate section with an opening through which solids from the discharge means are passed and carried through the downstream portion of the conduit which acts as a transport line,

(g) the downstream end of the transport line being connected to a particle separator, and

(h) the solvent vapor output from the particle separator being connected to the vapor supply means.

4,260,458

COKE OVEN CONSTRUCTION FOR THE CONTINUOUS COKING OF BRIQUETTES FROM HARD OR SOFT COAL OR PEAT

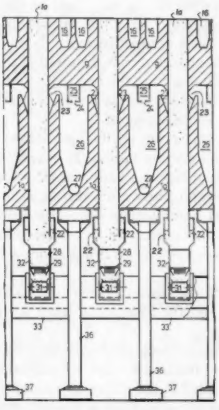
Heinrich Weber, Recklinghausen; Kurt Lorenz, Hattingen, and Horst Dungs, Herne, all of Fed. Rep. of Germany, assignors to Firma Carl Still Recklinghausen, Fed. Rep. of Germany

Filed Nov. 30, 1978, Ser. No. 964,890

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1977, 2756330

Int. Cl.[3] **C10B** *3/00, 3/02, 29/00, 33/00*

U.S. Cl. 202—121 **7 Claims**



1. A coke oven of the type having means with bottom discharge for the continuous vertical coking of briquettes from hard coal, soft coal or peat, comprising a housing having at least one heating wall dividing the coke oven chambers into a plurality of parallel interior vertically elongated coke oven chambers, said heating wall having portions between adjacent chambers defining a plurality of vertically extending binder walls and a plurality of individual heating flues therebetween, a nozzle communicating with each of said heating flues for the discharge of a rich gas into each flue, first and second vertical air ducts defined in respective alternate binder walls between said flues and having branch ducts connected to and communicating with said flues, each of said branch ducts of the respective vertical air ducts having a discharge for the discharge of air into said flues at vertically spaced locations, said first vertical air ducts having vertically spaced discharges into the flues on each side of the associated binder wall at height levels which differ from the vertically spaced discharges of said second vertical air ducts of the adjacent binder walls into the same flues in a heating wall portion between adjacent chambers, air duct supply means connected separately to the air ducts in the alternate binder walls, said coking chamber having means at a lower portion thereof defining a cooling chamber below said heating flues in communication with said coke oven chambers for cooling the briquettes, said heating walls having means defining a gas collecting chamber in the lower portion of said heating wall adjacent to said cooling chamber, said gas collecting chamber means defining a collecting flue therein and exhaust ports in the walls defining said collecting chamber for discharging heated cooling gas from said cooling chamber to said collecting flue, said gas collecting chamber and said collecting flue disposed parallel to said cooling chamber, said collecting chamber having a trough-shaped bottom part disposed below said collecting flue tapering downwardly to the bottom thereof for the collection of dust therein, a dust conveyor at the bottom of said trough-shaped bottom part for conducting away the dust collected therein and means for supplying a cooling gas to said cooling chamber below said exhaust parts.

4,260,459

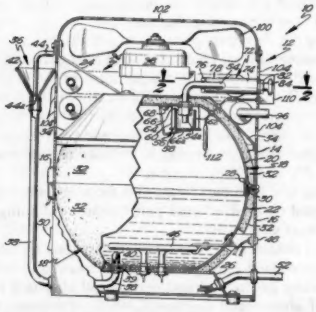
VENTED WATER DISTILLER

John D. Kirschmann, 933 Anderson St., Bismarck, N. Dak. 58501

Filed Sep. 13, 1978, Ser. No. 942,118

Int. Cl.[3] **B01D** *3/02*

U.S. Cl. 202—200 **7 Claims**



1. Distilling apparatus comprising:

a heating chamber having an outlet extending downwardly into said chamber at the upper end thereof;

a condenser disposed above said heating chamber and having a distillate outlet end and an inlet end in fluid flow communication with said heating chamber outlet;

means coacting to prevent the entrance of bubbles into said heating chamber outlet consisting essentially of a cylindrical screen member having first and second ends, said screen member surrounding said chamber outlet with said first end thereof located closely adjacent to the top wall of said heating chamber at said upper end of said chamber and with said second end of said screen member being below said heating chamber outlet, an imperforate disc closing said second end of said screen member, and a solid cylindrical member positioned coaxially with and inside of

said cylindrical screen member around said heating chamber outlet, said solid cylindrical member having a first, bottom end abutting against said disc and affixed thereto so as to define a cup therewith and a second, top end spaced from said heating chamber top wall so as to allow the passage of vapor thereover and into said heating chamber outlet, said screen member having apertures sized to prevent the passage of bubbles therethrough.

4,260,460

DEVICE FOR QUENCHING GLOWING COKE

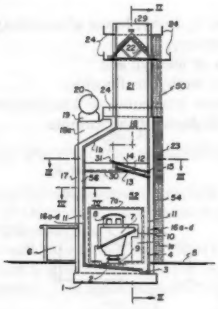
Josef Stratmann, and Manfred Strobel, both of Recklinghausen, Fed. Rep. of Germany, assignors to Firma Carl Still, Fed. Rep. of Germany

Continuation of Ser. No. 865,215, Dec. 28, 1977, abandoned. This application Feb. 28, 1979, Ser. No. 16,021

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1977, 2707672

Int. Cl.[3] **C10B** *39/08*

U.S. Cl. 202—227 **6 Claims**



1. In an apparatus for quenching glowing coke in a coke-quenching container, having a housing with spaced front and rear vertical walls and a vertical end wall at each end, and having respective entrance and exit openings in the respective end walls for a quenching car, the improvement comprising said housing defining a vertically elongated quenching chamber for the quenching container and having a ceiling portion extending from the top of said front wall at an angle upwardly and toward said rear wall for partly covering the top of said chamber, a flue extending vertically from the top of said chamber adjacent the ceiling portion for covering the remainder of the top of said chamber and which has a flue gas flow area above said chamber for the uptake of gases, heat sensitive deflectors in said flue, and a radiation shield partly overlying said chamber above the quenching car in alignment with said free gas flow section of said flue extending from said rear wall at an angle upwardly and toward said front wall at a location below said ceiling portion and having a gas flow cross-sectional area in said chamber shielding said heat sensitive deflectors in said flue from the radiation of said chamber and having a gas flow cross-sectional area in said chamber around said shield as large as the gas flow area of said flue, said flue having a rear wall and vertical end walls substantially in the plane of said rear wall and vertical end walls of said housing and continuous therewith.

4,260,461

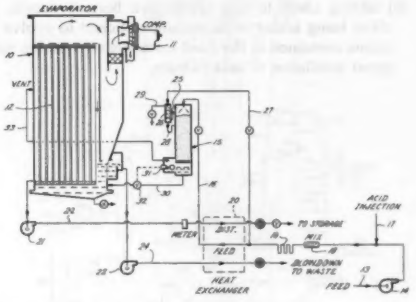
VAPOR COMPRESSION DISTILLATION APPARATUS AND METHOD

John E. Pottharst, Jr., 861 Carondelet St., New Orleans, La. 70130

Continuation of Ser. No. 819,213, Jul. 26, 1977, abandoned. This application Dec. 21, 1978, Ser. No. 971,714

Int. Cl.[3] **B01D** *1/28;* **C02F** *1/04, 1/20*

U.S. Cl. 203—7 **3 Claims**



3. In the distillation of water wherein water is evaporated on the tube side of a shell and tube evaporator by heat exchange with compressed steam on the shell side of the evaporator, said compressed steam being supplied by compressing steam evaporated on the tube side fo the evaporator, the improvement including the steps of

(a) injecting acid into the feedwater for the evaporator in an amount sufficient to prevent formation of magnesium hydroxide and to convert substantially all of the bicarbonates therein to carbon dioxide;

(b) heating the feedwater;

(c) deaerating the heated and acidified feedwater in a deaerating zone to remove substantially all of the carbon dioxide and non-condensibles therefrom;

(d) operating the deaerating zone at a pressure which is higher than that of the tube side of the evaporator;

(e) flowing the deaerated water from the deaerating zone into the tube side of said evaporator; and

(f) passing steam and non-condensibles from a vented portion of the shell side of the evaporator directly to said deaerating zone by-passing the tube side of the evaporator.

4,260,462

PROCESS FOR SEPARATING ACID GASES AND AMMONIA FROM DILUTE AQUEOUS SOLUTIONS THEREOF

William J. Didycz, Whitehall Borough; Donald Glassman, Mount Lebanon Borough; Edward E. Maier, Plum Borough, and George T. Saniga, Penn Hills Township, Allegheny Count, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 633,522, Nov. 19, 1975, abandoned. This application May 26, 1978, Ser. No. 909,861

Int. Cl.[3] **C02F** *1/04;* **B01D** *3/38*

U.S. Cl. 203—22 **28 Claims**

1. A process for achieving substantially complete removal of acid gases and ammonia from a dilute aqueous solution thereof, said solution also containing free and fixed ammonia salts, said process comprising:

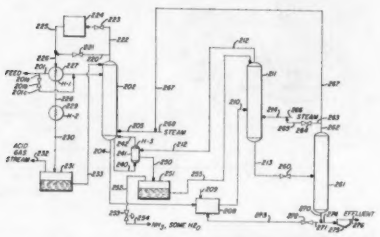
(a) subjecting said solution to a first counter-current multistage continuous distillation, said distillation being conducted by heating said solution, at least in part by means of a stripping vapor, and by having a gradient of ammonia concentration decreasing towards the region of bottom

liquid withdrawal which results in said bottom liquid having a pH of less than about 8.0,

(i) withdrawing from this first distillation an overhead vapor stream containing a major proportion of stripping vapor, substantially all of said acid gases in said solution, and substantially all of the ammonia from said free ammonia salts,

(ii) withdrawing from this distillation an aqueous bottom stream which contains substantially all of said fixed ammonia salts;

(b) adding alkali to said withdrawn bottom stream, said alkali being added in an amount sufficient to evolve ammonia contained in the fixed ammonia salts during subsequent distillation of said mixture,



(c) subjecting said withdrawn bottom stream to a second counter-current multi-stage continuous distillation,

(i) withdrawing from this second distillation an overhead vapor stream said vapor stream containing a portion of the ammonia from the fixed ammonia salts,

(ii) withdrawing from this second distillation an aqueous bottom stream,

(d) vaporizing the aqueous bottom stream of step (a) at least in part, (1) by heating said bottom stream by means of indirect heat exchange with at least a portion of the overhead vapor stream being withdrawn in step (c) and (2) by conducting said first distillation at a pressure substantially less than the pressure of the second distillation.

4,260,463

REMOVAL OF ORGANIC CONTAMINANTS FROM WASTE WATER

Walker H. Rideout, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 20, 1979, Ser. No. 77,464

Int. Cl.[3] **C25B** *1/16, 1/00;* **C02F** *1/46*

U.S. Cl. 204—98 **3 Claims**

1. A process for reducing the total organic carbon content of waste water containing organic compounds and alkali metal chlorides and recovering chloride and alkali values from the waste water comprising feeding the waste water to the anode compartment of an electrolytic cell, electrolyzing the waste water in the cell to oxidize organic constituents of the waste water to carbon dioxide and generate chlorine gas at the anode and withdrawing alkali metal hydroxide solution having a lower total organic compound content than that of the waste water fed to the anode compartment.

4,260,464

PROCESS FOR THE PREPARATION OF 17α-(3-IODOBENZOYLOXY)-9α-CHLORO-4-PREGNENE-3,20-DIONES AND THEIR D-HOMO HOMOLOGS

Ulrich Kerb; Manfred Stahnke, and Rudolf Wiechert, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Fed. Rep. of Germany

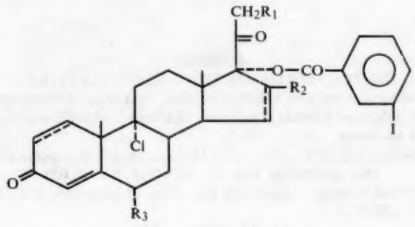
Filed Oct. 20, 1978, Ser. No. 953,323

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1977, 2748442

Int. Cl.[3] **B01J** *19/08*

U.S. Cl. 204—158 HA **8 Claims**

1. A process for the preparation of a 17α-(3-iodobenzoyloxy)-9α-chloro-4-pregnene-3,20-dione of the formula



wherein

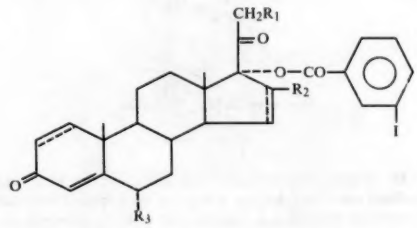
---- in all instances represents a C—C single or C═C double bond;

R_1 is hydrogen, hydroxy, lower alkanoyloxy or substituted lower alkanoyloxy;

R_2 is hydrogen or methyl; and

R_3 is hydrogen, methyl or fluorine,

which comprises irradiating a 17α-(3-iodobenzoyloxy)-4-pregnene-3,20-dione of the formula



with long wavelength untraviolet radiation in the presence of phenyliodine dichloride.

4,260,465

PHOTOPOLYMERIZABLE COMPOSITION STABILIZED WITH EPOXIDE COMPOUNDS AND PROCESS

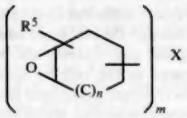
Francis A. Via, Yorktown Hts., N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 796,960, May 16, 1977, Pat. No. 4,146,453. This application Jan. 4, 1980, Ser. No. 109,941

Int. Cl.[3] **C08F** *2/50*

U.S. Cl. 204—159.23 **4 Claims**

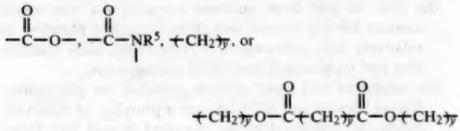
1. A photopolymerizable composition comprising at least one photopolymerizable ethylenically unsaturated compound containing a benzoin ether in an amount sufficient to initiate photopolymerization and a stabilizing amount of an epoxide having the formula:



wherein:

R^5 is hydrogen or alkyl of 1 to 4 carbon atoms;

X is oxygen,



where y is an integer from 1 to 4, m being 2; or

m being 1; and

n is zero or 1.

4,260,466

METHOD OF PRODUCING MAGNETIC RECORDING MEDIUM

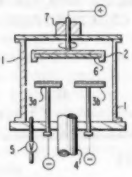
Ryuji Shirahata; Tatsuji Kitamoto; Yasuyuki Yamada, and Goro Akashi, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation-in-part of Ser. No. 736,914, Oct. 29, 1976, abandoned, which is a continuation of Ser. No. 558,104, Mar. 13, 1975, abandoned. This application Feb. 24, 1977, Ser. No. 771,583

Claims priority, application Japan, Mar. 13, 1974, 49/28844

Int. Cl.³ H01F *10/02*

U.S. Cl. 204—192 M **19 Claims**



1. A method of producing a magnetic recording medium comprising vapor depositing simultaneously (1) a ferromagnetic metal or alloy material, (2) a polymer, and (3) a dispersant, a lubricant or an anti-static agent onto a non-magnetic support to provide a magnetic recording layer thereon, wherein said vapor depositing is performed by vacuum depositing, sputtering or ion plating, and wherein the weight ratio of said ferromagnetic metal or alloy material (1) to polymer (2) deposited on said support is in the range of about 95/5 to 40/60.

4,260,467

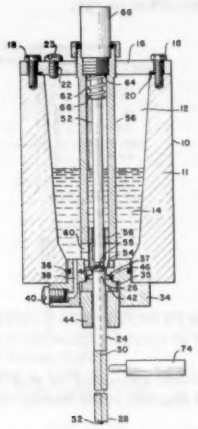
STATIC DROP MERCURY ELECTRODE

John L. Smith, Mercerville, and Bruce N. Whitlock, Pennington, both of N.J., assignors to Princeton Applied Research Corporation, Princeton, N.J.

Filed Jan. 26, 1978, Ser. No. 872,506

Int. Cl.³ G01N *27/34*

U.S. Cl. 204—195 H **20 Claims**



1. A static mercury drop electrode comprising:

a housing forming a reservoir for liquid mercury;

a dropping mercury capillary having first and second ends and forming a capillary passage therebetween with said capillary passage terminating in a downward direction at said second end; and

valve means for selective air-purging passage of mercury from said reservoir to said first end of said capillary to form static mercury drops at said second end of said capillary, said valve means including a valve seat positioned in said reservoir beneath the surface of said mercury at said first end of said capillary, sealing means for forming a sealing surface, and control means for selectively controlling the relative position of said sealing surface and said valve seat between an open position with said sealing surface disengaged from said first valve seat and in contact with mercury in said reservoir, and a closed position with said sealing surface engaged with said first valve seat to prevent flow of said mercury from said reservoir to said capillary passage.

4,260,468

GAS INDUCTION SWIMMING POOL CHLORINATOR

James A. Bradley, 717 N. Halifax Dr., Ormond Beach, Fla. 32074

Filed Sep. 10, 1979, Ser. No. 73,807

Int. Cl.³ C25C *7/00*

U.S. Cl. 204—260 **2 Claims**

1. A gas induction swimming pool chlorinator comprising:

a substantially cylindrical canister with a hole at the top thereof, said canister made of substantially water impervious material and adapted to hold water which serves as a cathode medium;

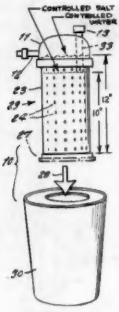
a main unit adapted to be inserted into the hole of said cylindrical canister, said main unit comprising a center module barrel provided with a plurality of perforations, a cylindrical membrane surrounding said center module barrel, a coil of wire acting as a cathode disposed around said membrane;

a slip cap adapted to being disposed on top of the main unit, said slip cap comprising a substantially hemispherical

member, a gas discharge line connected to and in communication with the interior of said hemispherical member, a salt charging port in communication with the hemispherical member, a water line attached to and in communication with said hemispherical member, and an electrical conduit in communication with the interior of said hemispherical member;

a source of electrical energy;

means for connecting said coil of galvanized wire to said source of electrical energy;



an electrical wire connected to said source of electrical energy and disposed in the interior of said electrical conduit;

a plurality of carbon welding rods connected to said electrical wire; and

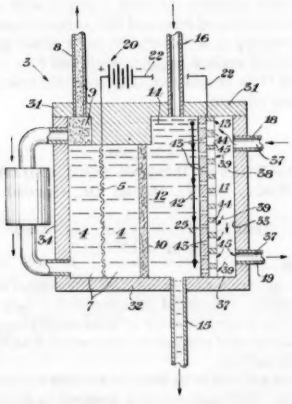
a shroud made of electrical insulating material having a plurality of perforations, said shroud surrounding said carbon welding rods and acting as an anode.

4,260,469

MASSIVE DUAL POROSITY GAS ELECTRODES

James A. McIntyre; Robert F. Phillips, both of Midland, and Joseph D. Lefevre, Bay City, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 5, 1978, Ser. No. 939,598
Int. Cl.[2] C25B *9/00, 11/03*
U.S. Cl. 204—265 **36 Claims**



1. A massive dual porosity electrode adapted for use in a vertical disposition in a large-scale electrolytic cell wherein a first side of said electrode is positioned to face an area of the cell which contains a liquid electrolyte solution and a second and opposite side, of the electrode is positioned to face an area of the cell containing a gas which is under a pressure insufficient to cause substantial bubbling of the gas through the electrode but is at a pressure sufficient to at least minimize seepage of the electrolyte through the electrode and into the portion of the cell containing the gas; wherein the maximum hydraulic head pressure created in the cell by said liquid electrolyte solution is in excess of about 1 psig, said electrode comprising:

a composite electroconductive multitudinously formainous body of generally flat and wall-like configuration having a given relatively tall vertical height constituted essentially for its structure of two distinct, contiguously juxtapositioned and adjoining differently apertured porous layer sections;

the first of said layer sections intended for electrolyte contact having therein and therethrough a plurality of relatively fine, micro-sized, pore-like fluid mass transferring and transmitting interstitial passageways;

the second of said layer sections intended for gas contact having therein and therethrough a plurality of relatively coarse, as compared to the openings in said first layer, micro-sized, pore-like fluid mass transferring and transmitting interstitial passageways;

at least the substantial majority of the interstitial passageways in each of said porous layers being in network communication with one another so as to provide complete passageways traverse through the overall wall thickness of said electrode body;

the relatively fine and coarse pores in the electrode body-traversing interconnected interstitial passageway network having a capillary pressure effect, functionally dependent upon the fluid-constricting cross-sectional area of the porous passageways in the network, upon and against a fluid when the same is being thereinto forced under pressure;

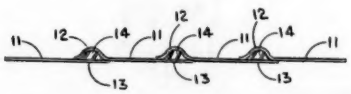
the capillary effect of said passageway network being of a magnitude such that gas under a given pressure of at least about 1 psig; is permitted ingress into at least the coarse pores in said second layer but is constrained from complete passage through said composite electrode body wherein such passage would cause the gas to bubble thereout; wherein said gas pressure is greater than the maximum hydraulic head pressure created in the cell by the liquid electrolyte solution.

4,260,470

INSOLUBLE ANODE FOR ELECTROWINNING METALS

Gordon L. Fisher, Mahwah, N.J., assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Oct. 29, 1979, Ser. No. 89,208
Int. Cl.[3] C25B *11/02, 11/04*
U.S. Cl. 204—286 **5 Claims**

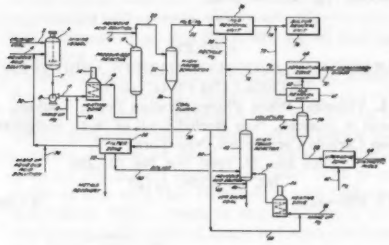


1. An essentially planar anode structure having surfaces of infiltrated sintered metal and a plurality of longitudinally extending ribs of a metal having an electrical conductivity greater than that of the infiltrated sintered metal and the capability of electrolytically forming an electroconductive insoluble oxide in the electrolyte in which said anode is used; said ribs being metallurgically bonded to and laterally sheathed by said infiltrated sintered metal and said ribs being bonded in conductive contact with means for feeding electrical current thereto.

4,260,471
PROCESS FOR DESULFURIZING COAL AND PRODUCING SYNTHETIC FUELS

J. Wayne Miller, Yorba Linda, Calif., assignor to Union Oil Company of California, Brea, Calif.

Filed Jul. 5, 1979, Ser. No. 55,063
Int. Cl.[3] C10G 1/00
U.S. Cl. 208—8 LE 19 Claims



1. A process for sequentially reducing the amount of pyritic, organic and sulfate sulfur in coal and other carbonaceous materials and producing synthetic fuels which comprises (a) forming a slurry by contacting said coal or carbonaceous material with hydrogen and an acidic-aqueous media in an amount sufficient to maintain the pH level below 6.0, at a temperature from about 300° F. to about 650° F. and a pressure from about 100 p.s.i.g., to about 4,000 p.s.i.g., and (b) contacting the coal or carbonaceous material with hydrogen at a temperature from about 800° F. to about 1,700° F., at a minimum hydrogen flow rate of from about 100 to about 5,000 volumes of hydrogen per volume of coal or carbonaceous material per hour.

4,260,472
PROCESS OF PRODUCING HYDROCARBONS FROM COAL

Karl H. Eisenlohr, Buchschlag, and Hans Gaensslen, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 931,349, Aug. 7, 1978, abandoned. This application Jan. 30, 1980, Ser. No. 117,137
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1977, 2735829
Int. Cl.[3] C10G 1/00, 1/06; C10J 3/00
U.S. Cl. 208—8 LE 8 Claims

1. In a process for producing hydrocarbons which boil in the gasoline and diesel fuel ranges from coal, wherein a first portion of coal is reduced to a particle size below 2 mm, mixed with oil to form a pumpable pulp, the pumpable pulp is contacted with hydrogen in a hydrogenating zone under a pressure of 100–400 bars at a temperature of 300°–500° C., the resultant hydrotreated product separated into fractions including a liquid fraction comprising mainly hydrocarbons of 4 to 30 carbon atoms per molecule and a high melting residue fraction containing pitch and solids,

A. a second portion of coal having a particular size of 3 to 50 mm is fed to a gasifying vessel and is gasified in a fixed bed under pressure of 10 to 100 bars by contacting the composition with at least one gasifying agent selected from the group consisting of water vapor, oxygen, and carbon dioxide, said gasifying agent passing in countercurrent flow to the direction of movement of said second portion of coal,

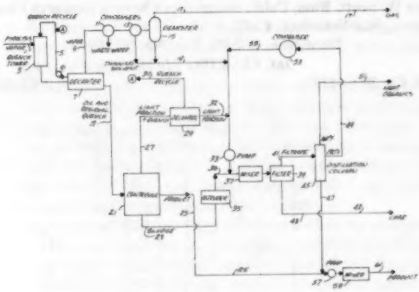
B. withdrawing gasification product gas comprising hydrogen and carbon monoxide from said vessel and cooling the same and withdrawing therefrom tar and oil as condensate, the gasification product gas is fed after purification to a Fischer-Tropsch synthesis section for production of primary product hydrocarbons which at least in part contain 4 to 30 carbon atoms per molecule, said primary product hydrocarbons being at least partially converted to motor fuel,

the improvement which comprises withdrawing said high melting residue fraction, granulating said residue fraction to a particle size of 3 to 50 mm and feeding it into said gasifying vessel for gasification together with said second portion of coal.

4,260,473
REMOVAL OF PARTICULATES FROM PYROLYTIC OIL

Hans F. Bauer, Dana Point, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Filed May 3, 1979, Ser. No. 35,722
Int. Cl.[3] C10G 1/02
U.S. Cl. 208—14 17 Claims



1. A process for producing organic liquid product from municipal, industrial, agricultural and sanitary waste containing organic solids, the process comprising the steps of:

(a) pyrolyzing a solid organic waste obtained from municipal, industrial, agricultural and sanitary waste containing organic solids in a substantially inert, oxygen-free atmosphere to produce pyrolysis vapor and a solid pyrolysis residue including fine particulate matter entrained in the pyrolysis vapor;

(b) separating the pyrolysis vapor containing entrained particulate matter from the solid pyrolysis residue;

(c) condensing at least a first portion of the separated pyrolysis vapor to produce pyrolysis liquid containing entrained particulate matter;

(d) centrifuging such pyrolysis liquid to produce a light fraction containing entrained particulate matter, a middle fraction substantially free of particulate matter, and a heavy fraction containing entrained particulate matter;

(e) recovering such middle fraction substantially free of particulate matter as organic liquid product;

(f) recovering such light fraction containing entrained particulate matter; and

(g) recovering such heavy fraction containing entrained particulate matter.

4,260,474

THERMAL CRACKING OF HEAVY FRACTION OF HYDROCARBON HYDROGENATE

Hans J. Wernicke, Wolfratshausen; Walter Kreuter, Penzberg, and Claus Schliebener, Strasslach, all of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Oct. 9, 1979, Ser. No. 82,453

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1978, 2843792

Int. Cl.[3] C10G *69/06*

U.S. Cl. 208—57 6 Claims

1. In a process for the cracking of heavy liquid hydrocarbon feed mixtures having a normal boiling point over 200° C. and containing monoaromatics and polyaromatics by hydrogenation of said feed and subsequent thermal cracking of resultant feed to obtain olefins, the improvement comprising the hydrogenation step being conducted under mild conditions such that the monoaromatics are essentially unchanged and the polyaromatics are extensively hydrogenated, and wherein between the hydrogenation step and the thermal cracking stage, there is provided an intermediate step of separating the hydrogenation product into a (i) light fraction containing the major proportion of the monoaromatics and (ii) a heavy liquid fraction, said heavy liquid fraction being substantially less isomerized than said light fraction, and subjecting only said heavy liquid fraction to the thermal cracking stage to obtain a product stream rich in ethylene.

4,260,475

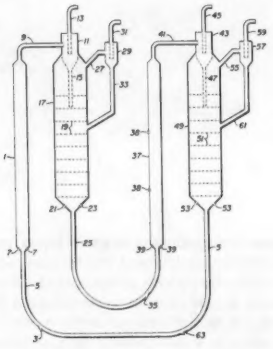
HYDROCARBON CRACKING PROCESS

John W. Scott, Ross, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 1, 1979, Ser. No. 90,221

Int. Cl.[3] C10G *11/18*

U.S. Cl. 208—113 3 Claims



1. A process for cracking hydrocarbons, which comprises:

(a) contacting said hydrocarbons with particulate solid in a cracking zone in the absence of externally supplied molecular hydrogen at cracking conditions including a temperature in the range from about 425° C. to about 700° C., whereby coke is deposited on said particulate solids, and withdrawing coke containing particulate solids and cracked hydrocarbons from said cracking zone;

(b) introducing coke-containing particulate solids into a lower portion of a generally vertically extending first regeneration zone, passing coke-containing particulate solids upwardly through said first regeneration zone entrained in upwardly flowing gases, burning a first portion of coke off entrained particulate solids with molecular oxygen, and removing particulate solids from an upper portion of said first regeneration zone; and

(c) passing particulate solids removed from said first regeneration zone into an upper portion of a generally vertically extending second regeneration zone, fluidizing particulate solids in said second regeneration zone in upwardly flowing gases, passing fluidized particulate solids generally downwardly through said second regeneration zone while substantially restricting gross back-mixing of fluidized particulate solids, burning a second portion of coke off fluidized particulate solids with molecular oxygen, and removing particulate solids from a lower portion of said second regeneration zone.

4,260,476

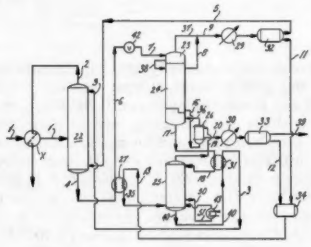
SEPARATION OF AROMATIC HYDROCARBONS FROM PETROLEUM FRACTIONS

Jose A. Vidueira, White Plains; Paulino Forte, Yonkers, and George S. Somekh, New Rochelle, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jan. 31, 1980, Ser. No. 117,295

Int. Cl.[3] C10G *21/28*

U.S. Cl. 208—321 4 Claims



1. A continuous solvent extraction-steam-distillation process for the recovery of aromatic hydrocarbons in the range of C_6 to C_{16} from a feedstock containing aliphatic hydrocarbons in the range of C_5 to C_{16} and said aromatic hydro-carbons, comprising the following steps:

(a) contacting the feedstock with a mixture of water and solvent in an extraction zone to extract aromatics from said feedstock and producing an aromatic rich solvent while the aliphatic portion of said feedstock passes out of the top of said extraction zone as a raffinate;

(b) passing said aromatic rich solvent to a flash zone where said aromatic rich solvent is let down to partially vaporize said aromatic rich solvent and to obtain an overhead vapor stream containing hydrocarbons, water and solvent traces;

(c) condensing said overhead vapor stream and dividing the condensate into a hydrocarbon rich phase and a water rich phase;

(d) passing the liquid hydrocarbon rich phase from step (c) as reflux to the bottom of said extraction zone to displace non-aromatic impurties in said aromatic rich solvent with aromatics from said reflux;

(e) passing the unvaporized portion of said aromatic rich solvent from step (b) to the top of a first distillation zone;

(f) contacting the unvaporized aromatic rich solvent with a stream of steam in said first distillation zone to further remove remaining heavy non-aromatic components from said aromatic rich solvent;

(g) passing a vapor stream of water and hydrocarbon from the top of said first distillation zone into the vaporized overhead stream from said flash zone obtained in step (b) prior to condensing such stream;

(h) passing an aromatic rich solvent liquid stream from the first distillation zone to a reboiler in heat exchange relationship with a top vapor stream of hydrocarbons and steam from a second distillation zone whereby said aromatic rich solvent stream is partially vaporized to a hyrocarbon and steam stream;

(i) passing the partially vaporized hydrocarbon steam stream from step (h) back into said first distillation zone to provide the steam for step (f);

(j) withdrawing the liquid portion of the partially vaporized aromatic rich solvent stream from the bottom of the first distillation zone and passing such liquid stream to a heat exchanger;

(k) heat exchanging such liquid portion of said aromatic rich solvent with a lean solvent liquid stream from the bottom of said second distillation zone;

(l) introducing said aromatic rich solvent liquid stream after heat exchange from step (k) to the top of such second distillation zone;

(m) contacting said aromatic rich solvent liquid stream with steam in said second distillation zone to remove substantially all aromatic hydrocarbons from said solvent stream thereby providing the lean solvent stream used in step (k);

(n) passing a stream of steam and aromatic hydrocarbons from the top of such second distillation zone to said reboiler in heat exchange relationship with said aromatic rich solvent liquid stream in step (h) thereby partially condensing said stream of steam and aromatic hydrocarbon;

(o) further condensing said stream of steam and hydrocarbons from said reboiler and decanting said condensed stream into an aromatic rich product phase and a water rich phase;

(p) combining said decanted overhead water from step (c) and water from step (o);

(q) passing said combined water in heat exchange relationship with said aromatic rich solvent from the bottom of the extraction zone thereby vaporizing said water stream; and

(r) passing said vaporized water into the bottom of said second distillation zone to strip out the aromatics from said rich solvent thereby providing a lean solvent which after being heat exchanged with the liquid portion of said aromatic rich solvent in step (k) is recycled to extraction zone in step (a).

4,260,477

MAGNETIC SEPARATORS

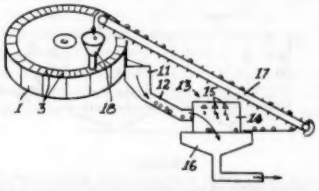
Ian J. Corrans, Randburg, South Africa, assignor to National Institute of Metallurgy, Randburg, South Africa

Filed Mar. 5, 1979, Ser. No. 17,283

Claims priority, application South Africa, Mar. 14, 1978, 78/1467

Int. Cl.³ B03C *1/30*

U.S. Cl. 209—38 **13 Claims**



1. A magnetic separator comprising an annular housing rotatable about a generally vertical axis and adapted to contain a matrix therein composed of a plurality of separate elements of magnetic material, outlets for elements constituting the matrix in the lower region of the said annular housing, means for releasably opening said outlets at one or more required positions around the circumference of the housing, means for cleaning elements constituting said matrix and which issue from said outlet wherein only a portion of the matrix elements in a locality is cleaned during one revolution of the housing in use, and further means for returning cleaned elements to the annular housing after cleaning.

4,260,478

APPARATUS FOR CLASSIFYING PARTICLES

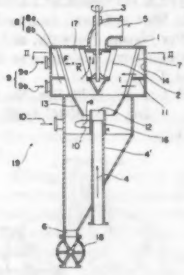
Masuo Hosokawa, Toyonaka; Tohei Yokoyama, Kuse; Katsuya Mizui, Yahata; Haruhisa Yamashita, Hirakata, and Kouichi Doi, Yahata, all of Japan, assignors to Kabushiki Kaisha Hosokawa Funtai Kogaku Kenkyusho, Osaka, Japan

Filed Nov. 28, 1979, Ser. No. 98,275

Claims priority, application Japan, Nov. 24, 1978, 53-145802; Dec. 6, 1978, 53-151582; Feb. 2, 1979, 54-13321[U]; May 28, 1979, 54-65809

Int. Cl.³ B04C *5/06;* **B07B** *7/083*

U.S. Cl. 209—139 A **7 Claims**



1. An apparatus for classifying particles comprising,

a main body (1) having a fine particle outlet (5) and a coarse particle outlet (6),

a classifying fan wheel (2) rotatably disposed within the main body (1) and having an inside space in communication with the fine particle outlet (5), and a first gas inlet channel (4) communicating with the interior of the main body (1) for supplying the particles to be classified to the fan wheel (2) externally thereof along with a gas stream,

the apparatus being characterized in that

a gas passing member (7) is disposed within the main body (1) to surround the classifying fan wheel (2) at a suitable spacing and has a large number of gas inlets (15) opened toward the direction of rotation of the fan wheel (2), and

the first gas inlet channel (4) is in communication with the interior of a classifying chamber (17) provided inside the gas passing member (7), a second gas inlet channel (9) communicating with the interior of a gas chamber (8) formed between the gas passing member (7) and the inner wall surface (14) of the main body (1).

4,260,479

CATALYTIC OXIDATION OF MERCAPTAN IN SOUR PETROLEUM DISTILLATE

Robert R. Frame, Glenview, Ill., assignor to UOP Inc., Des Plaines, Ill.

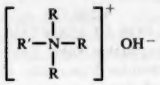
Continuation-in-part of Ser. No. 927,318, Jul. 24, 1979, Pat. No. 4,026,079, which is a continuation-in-part of Ser. No. 880,723, Feb. 24, 1978, Pat. No. 4,124,493. This application Sep. 27, 1979, Ser. No. 79,624

Int. Cl.³ C10G *27/06*

U.S. Cl. 208—207 **19 Claims**

1. A method for treating a mercaptan-containing sour petroleum distillate to oxidize the mercaptan present in said distillate, said method comprising contacting said distillate at oxidation conditions with an oxidizing agent and a preformed catalytic composite comprising both a metal chelate and a quaternary ammonium hydroxide impregnated upon an adsorptive

support, said quaternary ammonium hydroxide being represented by the structural formula



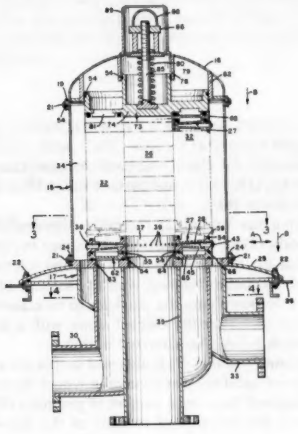
wherein R is a hydrocarbon radical containing up to about 20 carbon atoms and selected from the group consisting of alkyl, cycloalkyl, aryl, alkaryl and aralkyl and R' is a substantially straight chain alkyl radical containing from about 5 to about 20 carbon atoms.

4,260,480

MULTIPLE HYDROCYCLONE DEVICE

Kenneth D. Lewis, Wilton, Conn.; Andrew P. Charlton, Pleasant Valley, N.Y.; Per Nyrop, Norwalk, and Tristan O. Merediz, Fairfield, both of Conn., assignors to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Aug. 16, 1978, Ser. No. 934,317
Int. Cl.³ B04C *5/28*
U.S. Cl. 209—211 **13 Claims**



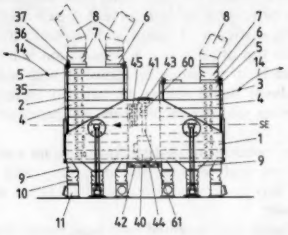
1. A multihydrocyclone device comprising:
a. an enclosed cylindrical housing,
b. a plurality of cyclone cluster discs stacked concentrically one upon the other within said housing in internested vertical relationship,
c. each of said cyclone discs comprising a premolded circular support member having an inner hub and an outer rim portion interconnected by a plurality of integrally formed radially extending spaced cyclone bodies,
d. said outer rim portions of said stacked cyclone discs spaced from the walls of said housing to provide an outer discharge chamber in said housing,
e. an inner discharge chamber spaced from said outer discharge chamber and formed by the nested hub portions of said cyclone discs,
f. a feed inlet chamber provided intermediate said discharge chambers between said cyclone bodies,
g. spaced underflow and overflow openings in each of said cyclone bodies each opening to one of said discharge chambers,
h. positioning means provided on said discs for aligning said discs in stacked concentric relationship one upon the other, and
i. releasable means provided at the top of said cluster stack for maintaining said discs in said stacked concentric relationship and including a thrust plate mounted on top of said stack of cyclone discs, spring means engaging said thrust plate and means for adjusting the tension of said spring means.

4,260,481

SIFTING DEVICE

Alois Keller, Uzwil, Switzerland, assignor to Gebrueder Buehler AG, Uzwil, Switzerland

Filed Apr. 5, 1979, Ser. No. 27,248
Claims priority, application Switzerland, May 2, 1978, 4754/78
Int. Cl.³ B07B *1/38*
U.S. Cl. 209—315 **8 Claims**



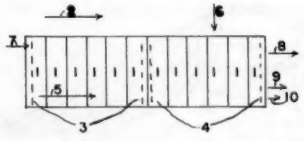
1. A housing for a free swinging plansifter comprising a carriage (13) having a bottom (16), a pair of side walls (15), and a roof portion (18), interconnected to comprise a central drive casing (17) between a pair of troughs receiving and laterally bracing stacks of sieves,
said side walls tapering outwardly in opposite directions from said roof portion to facilitate insertion and removal of said stacks of sieves from said troughs;
and means for mounting a vibration generator in said drive casing so as to apply to said bottom and said roof portion forces generally parallel to said bottom.

4,260,482

TWO STAGE GRAVITY METHOD OF CONCENTRATION OF FINE DRY MATERIALS

Paul D'Aragon, 21 St. Jacques, St. Sauveur des Monts, Quebec, Canada (J0R 1R0)

Filed Sep. 24, 1979, Ser. No. 78,008
Int. Cl.³ B07B *13/08*
U.S. Cl. 209—480 **4 Claims**



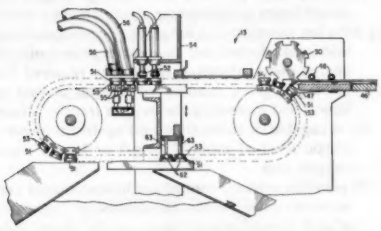
1. A two stage method of concentration of fine dry materials according to specific gravity comprising: feeding the dry materials to one end of a series of troughs connected side-to-side with parallel long axes to form a conveyor belt, moving said series of troughs in a closed circuit, shaking the troughs at a first location with a series of cyclic shaking motions directed parallel to the movement in said closed circuit, thereby producing a concentration of materials of higher specific gravity in a deposit beneath at least one layer of material of lesser specific gravity, said deposit being located at the bottom and against a longitudinal wall of each trough, shaking the troughs as they further travel in a series of cyclic shaking motions

directed parallel to the long axes of the troughs at a second downstream location to thereby cause said deposit of higher specific gravity to move parallel to said long axes in the troughs differentially from those of lesser specific gravity materials into suitable receivers as the troughs move downwardly in a half circle in their closed circuit.

4,260,483
BOTTLE CAP INSPECTING MACHINE

John G. Nicholson, New Rochelle, N.Y., and Ian P. Campbell, South Norwalk, Conn., assignors to Zapata Industries, Inc., Frackville, Pa.

Filed Feb. 2, 1978, Ser. No. 874,649
Int. Cl.[3] B07C *5/34*
U.S. Cl. 209—539 **46 Claims**



1. In an inspection apparatus for automatically inspecting closures of the type having a concave interior portion, said apparatus including an inspection station, output station and rejection station, feeding means for serially supplying closures to said inspection station for inspection thereof, inspection means including at least one inspection head located at said inspection station for insertion into the concave interior of the closures and sensing means connected to said at least one inspection head for sensing the presence or absence of certain physical characteristics of the interior of the closure as included in an acceptable closure and delivery means responsive to sensing an acceptable closure with said characteristics for ejecting said acceptable closures from the feeding means at said output station and ejecting unacceptable closures not having said characteristics from said feeding means at said rejection station, the improvement characterized in that:

(a) the inspection means includes pressure means for supplying pressurized fluid to each of said inspection heads at a predetermined positive pressure;

(b) each inspection head has a shape correlated to the interior of acceptable closures having said characteristics to form a fluid tight seal therewith which is capable of withstanding said predetermined positive pressure; and

(c) said sensing means is connected between said inspection heads and said delivery means for sensing the pressure developed in the inspection heads and actuating the delivery means to eject acceptable closures from the feeding means when said closures are at said output station.

4,260,484
PROCESS FOR RENEWING THE ADSORPTIVE CAPACITY OF A BED OF ACTIVE CARBON

John F. Connolly, Glen Ellyn, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 844,024, Oct. 20, 1977, abandoned, which is a continuation-in-part of Ser. No. 699,080, Jun. 23, 1976, abandoned. This application Mar. 29, 1979, Ser. No. 24,946
Int. Cl.[3] B01J *20/34*
U.S. Cl. 252—411 R **5 Claims**

1. A process for renewing the adsorptive capacity of a bed of active carbon by electrochemical adsorbate transformation, said active carbon having a surface area greater than one hundred square meters per gram, which process comprises the following steps:

(a) contacting said bed of active carbon with an effluent containing less than one thousand parts per million of at least one hydroxyaromatic compound until an appreciable amount of said hydroxyaromatic compound is adsorbed onto said bed of carbon, said hydroxyaromatic compound being selected from the group consisting of phenol, substituted phenol, alkyl phenol, aryl phenol, alkaryl phenol, halo phenol, dihydroxy benzene, hydroxy naphthalene, chlorophenols, cyclohexylphenol, xylenenols, cresols, trichlorophenols, catechol, resorcinol, hydroquinone, pyrogallol, and naphthols;

(b) introducing a conductive solution to said bed of carbon and making said carbon the positive electrode of an electrolytic cell;

(c) applying a positive potential to said bed of carbon of from about 0.8 volts to about 1.2 volts versus a Saturated Calomel Electrode which is sufficient enough to transform said compound into a species which has a high affinity for said carbon or a low affinity for said conducting solution, with said potential being less than that required for complete oxidation of said compound;

(d) discontinuing the application of said positive potential to said bed of carbon;

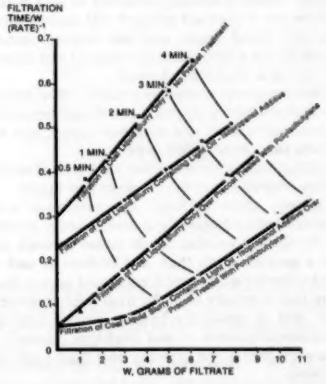
(e) reintroducing effluent containing at least one said hydroxyaromatic compound to said bed of carbon; and

(f) repeating the above steps until renewed adsorptive capacity of said bed of carbon for said hydroxyaromatic compound is substantially reduced, said adsorptive capacity of the bed of carbon being renewed without desorption of said hydroxyaromatic compound during each application of said positive potential.

4,260,485
FILTRATION OF A COAL LIQUID SLURRY USING POLYISOBUTYLENE AND AN ALCOHOL

Norman L. Carr, Allison Park, and Edgar L. McGinnis, Gibsonia, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed May 7, 1979, Ser. No. 36,857
Int. Cl.[3] B01D *37/02*; C10G *1/04*
U.S. Cl. 210—728 **32 Claims**



1. A process for increasing the rate of filtration of a coal liquid slurry produced in a process for dissolving hydrocarbonaceous fuels from coal with a solvent and containing hydrocarbonaceous liquid and suspended coal minerals comprising adding to said coal liquid slurry polyisobutylene and an alcohol containing 2 to 10 carbon atoms which forms a homogeneous composition in said coal slurry, and filtering said slurry.

16. A process for increasing the rate of filtration of a coal

liquid slurry produced in a process for dissolving hydrocarbonaceous fuels from coal with a solvent and containing hydrocarbonaceous liquid and suspended coal minerals comprising depositing a precoat cake of filter aid on a filter element, passing a solution of polyisobutylene in hydrocarbonaceous oil through said precoat cake, adding to said coal liquid slurry an alcohol containing 2 to 10 carbon atoms which forms a homogeneous composition in said coal liquid slurry, and filtering said slurry through said precoat cake.

4,260,486

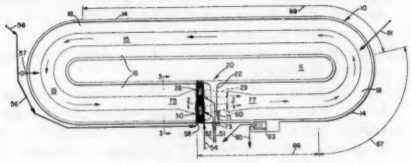
FLOW-CONTROL APPARATUS AND PROCESS FOR AN OXIDATION DITCH

John H. Reid, 7 Stansbury Ct., Fredericksburg, Va. 22401

Division of Ser. No. 848,705, Nov. 4, 1977, which is a continuation-in-part of Ser. No. 649,995, Jan. 19, 1976, abandoned. This application Nov. 3, 1978, Ser. No. 957,432

Int. Cl.³ B01D *21/02*

U.S. Cl. 210—96.1 **5 Claims**



1. In a closed-circuit oxidation ditch comprising a wastewater inlet, an outlet to a clarifier, a return sludge inlet, and an endless channel having a bottom, opposed sides, and a substantially uniform cross-sectional area in which a circulating mixed liquor, containing a bacterial floc including heterotrophic aerobic, heterotrophic facultative and autotrophic microorganisms, circulates translationally at a circulation velocity sufficient to maintain said floc in suspension, said floc utilizing wastewater entering said channel through said wastewater inlet as a food source at a food-to-microorganism ratio by weight of 0.01 to 2.5, the improvement comprising a flow-control apparatus which provides repetitive aerobic treatment at least once per circuit-flow cycle to all of said mixed liquor within said endless channel and comprises:

A. a barrier which is sealably attached to said bottom and said sides and is disposed athwart said endless channel to divide said mixed liquor and said endless channel into upstream liquor within an intake channel and downstream liquor within a discharge channel;

B. an axial-flow pump, comprising a down-flow impeller, an intake funnel which is disposed above said impeller and in flow connection with said upstream liquor, and a downdraft tube surrounding said impeller;

C. a mounting means for mounting said axial-flow pump in said flow connection with said upstream liquor;

D. a discharge duct: in flow communication with said downsdraft tube comprising a downwardly leading portion, a horizontal portion which passes beneath said barrier at a greater depth than said bottom of said endless channel whereby a pressure is generated upon a liquor-gas mixture that is greater than the hydraulic pressure at said bottom, and an upwardly leading portion leading from said horizontal portion to said discharge channel; and

E. an aeration means for creating said liquor-gas mixture, comprising:

(1) a sparge means,

(2) a delivery means for moving an oxygen-containing gas to said sparge means,

(3) a casing pipe which is sealably attached to said discharge duct,

(4) a sparge tube which is removably mounted within said casing pipe and which is disposed within said discharge duct past said downwardly leading portion to provide supplementary gas when BOD loads are very heavy or when it is desirable to substitute aeration within said discharge duct for pump aeration within said downdraft tube because of flow rate considerations, so that the velocity of upwardly translational movement through said discharge duct is increased by an air-lift pumping effect acting in addition to or instead of the pumping effect of said down-flow impeller whereby selective and independent operation of said axial-flow pump and said aeration means, in cooperation with said barrier:

(a) forces all of said mixed liquor to flow through said discharge duct;

(b) creates said liquor-gas mixture with said discharge duct,

(c) transfers oxygen from said gas in said liquor-gas mixture to said all of said mixed liquor to form an aerated mixed liquor as said downstream liquor,

(d) completely prevents back-mixing of said aerated mixed liquor to said sparge means, thereby increasing the log mean driving force for oxygen transfer across said intake funnel and the discharge end of said discharge duct, increasing the energy required for dissolving a given quantity of oxygen in said mixed liquor, and increasing the oxygen transfer efficiency,

(e) is capable of controlling said upstream liquor at an anoxic level of about 0.1 mg/l or less of dissolved oxygen, and

(f) provides velocity control and independently variable aeration control, so that the dissolved-oxygen content of said aerated mixed liquor can be varied independently of said sufficient velocity, while providing said repetitive aerobic treatment to said all of said mixed liquor at a single location within said endless channel and translationally circulating said mixed liquor at said sufficient circulation velocity to maintain said bacterial floc in said suspension.

4,260,487

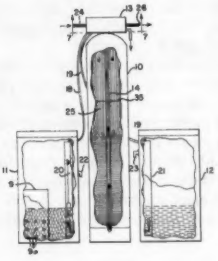
COMBINATION FILTER AND SOFTENER UNIT

Glenn H. Gruett, 303 S. Victoria St., Appleton, Wis. 54911

Continuation of Ser. No. 908,230, May 22, 1978, abandoned. This application Aug. 3, 1979, Ser. No. 63,460

Int. Cl.³ C02F *1/42*

U.S. Cl. 210—190 **7 Claims**



1. A water treatment system consisting of a single treatment tank containing a single media material for both filtering and softening the water, said media material consisting of a manganese containing exchangeable treated zeolite sodium ions to oxidize and precipitate iron, manganese and H_2S, and to soften the water, a holding tank containing a chemical comprising potassium permanganate to restore oxygen to the zeolite, a brine tank containing a brine solution to restore the sodium ion content of the zeolite, a water supply source, a control valve operatively connected with said supply source, with said treatment tank, with said holding tank and with said brine tank, said valve being capable of controlling the flow of potassium permanganate solution from the holding tank to the treated zeolite

to restore oxygen to the zeolite, the flow of brine solution from the brine tank to the zeolite to restore the sodium ion content of the zeolite and the flow of water to the zeolite to rinse the zeolite, said valve constructed and arranged to operate in sequence to direct said potassium permanganate solution from the holding tank into the manganese treated zeolite and then direct water into the zeolite to rinse out the residual permanganate, then direct brine solution from the brine tank into the zeolite to restore the sodium ion content of the zeolite, and then direct water into the zeolite again to rinse the zeolite.

4,260,488

DEVICE FOR COMPACTING AND DRAINING FLUID SLUDGES CONTAINING FIBROUS MATERIALS

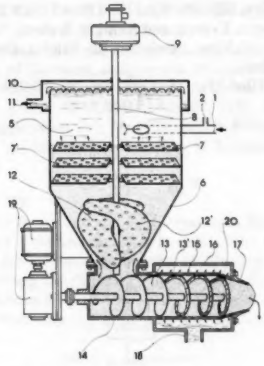
Elie Condolios, Grenoble, France, assignor to Societe Generale de Constructions Electriques et Mecaniques Alsthom S.A., Paris, France

Filed Aug. 11, 1976, Ser. No. 713,607

Claims priority, application France, Aug. 19, 1975, 75 25687; Jun. 11, 1976, 76 177755

Int. Cl.³ C02F *11/12*

U.S. Cl. 210—259 **12 Claims**



1. A device for compacting or settling aqueous sludge containing finely divided mineral and fibrous substances of organic or mineral origin after previous treatment by primary and secondary floculation of the sludge in its original liquid support, said apparatus comprising a vertical vessel including an upper cylindrical portion and a lower conical portion, a supply pipe for the sludge to be treated extending tangentially at a level below the top of the cylindrical portion of said vessel, a plurality of rotating perforated blades having a vertical axis installed in said cylindrical portion below said supply pipe, a conical rotating screw having a vertical axis installed in the conical portion of said vessel, said conical screw comprising means including at least one blade having a pitch correlated to the fibrous sludge to be treated so that compressed sludge at this level is not solidified and still contains interstitial water, said conical portion having a lower end with an outlet orifice thereat for compressed sludge, a spillway at the upper end of the cylindrical portion of said vessel for the discharge of a part of the interstitial water contained in the sludge, a horizontal cylindrical chamber secured to said conical portion of said vessel at the outlet orifice, said chamber including a downstream portion having a wall constituted as a grating for the discharge of remaining interstitial water contained in the sludge, a rotating screw installed in said chamber and extending beneath said outlet orifice, said chamber having an outlet orifice at an end thereof for discharge of compacted sludge, and flexible outlet means at said orifice having a conical shape and a free end with an outlet diameter which is smaller than its inlet diameter.

4,260,489

TREATMENT OF OILY SLUDGE

George Greig, Lightwater, and Michael P. Broadribb, Rochester, both of England, assignors to The British Petroleum Company Limited, London, England

Continuation of Ser. No. 884,156, Mar. 7, 1978, abandoned. This application Jul. 19, 1979, Ser. No. 58,946

Int. Cl.³ B01D *11/02, 25/32*

U.S. Cl. 210—771 **13 Claims**

1. A method for the treatment of oily sludge having a water content in the range of 20–95% by weight, an oil content in the range 5–70% by weight and the remainder solid particles, which method comprises the steps of diluting the oily sludge with water only, filtering the water-diluted oily sludge in a precoated surface filter to produce a filter cake comprising mainly said solid particles together with some oil and water, washing the filter cake while on the filter with a light hydrocarbon solvent selected from the group consisting of kerosene and naphtha to remove the oil and water, and steam stripping the washed filter cake to a residual oil content of less than 1% by weight oil.

4,260,490

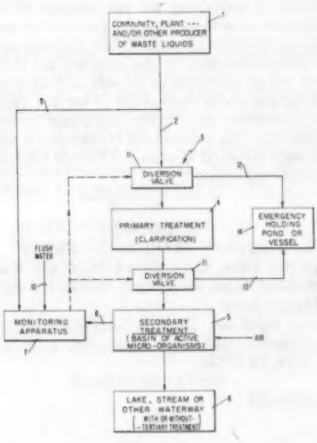
BIOMONITOR TO SAFEGUARD WATER PURIFICATION PROCESS FROM TOXICANTS

Jack R. Moss, Charleston, W. Va.; John W. Sugar, Clarence, N.Y.; Ronald A. Riemer, Indianapolis, Ind.; Charles E. Frick, South Charleston, and Ronald D. Dillon, Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 946,312, Sep. 27, 1978, abandoned, which is a continuation of Ser. No. 662,737, Mar. 1, 1976, abandoned. This application Nov. 9, 1979, Ser. No. 93,039

Int. Cl.³ C02F *3/02*

U.S. Cl. 210—620 **26 Claims**


COMMUNITY, PLANT --- AND/OR OTHER PRODUCER OF WASTE LIQUIDS
DIVERSION VALVE
PRIMARY TREATMENT (CLARIFICATION)
EMERGENCY HOLDING POND OR VESSEL
FLUSH WATER
DIVERSION VALVE
MONITORING APPARATUS
SECONDARY TREATMENT (BASIN OF ACTIVE MICRO-ORGANISMS)
LAKE, STREAM OR OTHER WATERWAY WITH OR WITHOUT TERTIARY TREATMENT

1. Method of monitoring a waste influent stream to a waste treatment basin which contains active microorganisms for levels of materials injurious to the microorganisms in the basin comprising the steps of:

(a) measuring the rate of oxygen uptake, R, in a first sample of liquor from said basin, said first sample having a predetermined volume and a predetermined dissolved oxygen content;

(b) measuring the rate of oxygen uptake, M, in a mixture of a second sample of liquor taken from said basin and a sample of liquid from said waste influent stream, said second sample having substantially the same volume and dissolved oxygen content as said first sample;

(c) computing the differential, M − R;

(d) providing a toxic condition signal when said differential, M−R, is lower than a predetermined value indicating a toxic effect of said influent stream sample on said sample of liquor from said basin.

(e) diverting said influent stream to a holding zone separate from said basin, when said differential, M−R, is lower than a predetermined value indicating a toxic effect of said influent stream on said sample of liquor from said basin.

4,260,491

CHROME REMOVAL WASTE TREATMENT PROCESS

John D. Cassidy, Ambler, and Lester Steinbrecher, Southampton, both of Pa., assignors to Amchem Products, Inc., Ambler, Pa.

Filed Nov. 15, 1978, Ser. No. 960,945
Int. Cl.[3] C02F *1/70*
U.S. Cl. 210—720 **18 Claims**

1. In a process for the removal of chrome from waste water which includes chromium in the hexavalent valence state, wherein the pH of said waste water is adjusted to below about 5,

wherein a reducing agent is added to said waste water while its pH is below about 5 in an amount sufficient to convert all of the chromium present in the hexavalent valence state to the trivalent valence state,

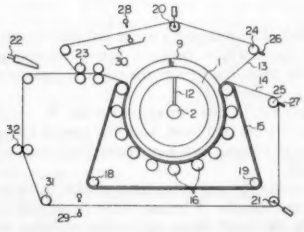
wherein the pH of the thus treated waste water is adjusted to about 7.5 to about 10.0 by adding thereto an inorganic base to permit formation of chromic hydroxide, wherein said chromic hydroxide is then removed from said waste water, and wherein said waste water contains at least one chelating agent which is capable of complexing trivalent chromium thereby making removal of the trivalent chromium from the waste water difficult, the improvement which comprises adding to the waste water while its pH is below about 5, either before or after said reducing agent is added to said waste water, one or more salts which are effective in promoting the precipitation of the chromic hydroxide notwithstanding the presence of said chelating agent for trivalent chromium, said salt being selected from the group consisting of the chloride and sulfate salts of ferric and aluminum in an amount sufficient to provide at least an amount in equivalents of the salt cation equal to 0.01 equivalents of trivalent chromium present after reduction, with the proviso that the amount in equivalents of the cation be equal to at least 0.8 times the equivalents of the chelating agent.

4,260,492

ROTARY DIAPHRAGM PRESS

Masaharu Ito, Kobe; Shiro Kondo, Miki, and Kazuo Honjo, Himeji, all of Japan, assignors to Shinko-Pfaudler Company Ltd., Hyogo, Japan

Filed Jun. 27, 1979, Ser. No. 52,351
Claims priority, application Japan, Jul. 1, 1978, 53/80314; May 23, 1979, 54/63649
Int. Cl.[3] B01D *33/14*
U.S. Cl. 210—386 **9 Claims**



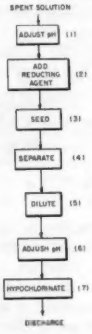
1. A rotary diaphragm press for continuous squeeze filtering for sludge dehydration comprising a drum having a longitudinal axis about which it is adapted to revolve and having a tubular diaphragm mounted on its periphery, said tubular diaphragm including abutting, fluid pressure inflatable tubular hollow portions arranged side by side with a clearance between adjacent portions to provide an outer peripheral surface, an endless belt assembly comprising a cover cloth, a filter cloth, and a non-extensible, permeable back-up belt separately extended and arranged one above the other over said outer peripheral surface, and a series of receiving rollers disposed in parallel with a spindle for said drum so as to press said endless belt assembly against said outer peripheral surface in a contact zone of said endless belt assembly, a squeeze zone formed in said contact zone to allow fluid pressure to act between said back-up belt and said tubular diaphragm, and filler means arranged to be disposed in said clearance between said adjacent tubular hollow portions and said cover cloth within said squeeze zone to allow fluid pressure to act substantially uniformly in an axial direction of said drum within said squeeze zone.

4,260,493

SOLUTION WASTE TREATMENT

George A. Kretas, Everett, and Irving R. Ireland, Newton Lower Falls, both of Mass., assignors to Shipley Company, Inc., Newton, Mass.

Filed May 21, 1979, Ser. No. 40,954
Int. Cl.[3] C02F *1/52*
U.S. Cl. 210—714 **14 Claims**



1. A process for the waste treatment of a spent metal plating solution containing dissolved metal from the group of copper and nickel that plates over a catalytic surface in the presence of a reducing agent, a complexing agent for said dissolved metal, and a reducing agent for said dissolved metal, said process comprising the steps of, in either order, removing said dissolved metal from solution and inactivating said complexing agent in solution prior to discharge, said dissolved metal being removed by adjusting the pH of the solution and the concentration of reducing agent in the solution to render said plating solution a plating solution capable of plating substantially all of said dissolved metal onto a catalytic surface, contacting said solution with a particulate metal of large surface area, said particulate metal having absorbed thereon a metal catalytic to the deposition of the dissolved metal in solution and overcoated with a thin layer of a metal autocatalytic to said dissolved metal and maintaining the particulate material in contact with the solution for a time sufficient to deposit substantially all of said dissolved metal on said particulate material, said complexing agent being inactivated by contacting the same with a source of halogen for a time sufficient to inactivate said complexing agent.

4,260,494

METHOD OF PURIFYING AQUEOUS SOLUTIONS OF METAL HYDROXIDES

Ronald L. Dotson, and Edward P. Carr, both of Cleveland, Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed Dec. 4, 1978, Ser. No. 965,818

Int. Cl.[3] C02F *1/72*

U.S. Cl. 210—721 1 Claim

1. A process for purifying an aqueous solution of sodium hydroxide containing a complex of mercury and having a sodium hydroxide concentration in the range from about 40 to about 60% by weight, which comprises:

(a) heating said solution to a temperature of at least 25° C.,

(b) reacting hydrogen peroxide and sulfur with said solution to precipitate solid particles of a complex of mercury and sulfur in said solution, and

(c) separating said solid particles from said solution,

(d) the molar ratio of said hydrogen peroxide to said complex of mercury being in the range of from about 8:1 to about 20:1.

4,260,495

PROCESS FOR THE FILTRATION OF ZEOLITE SUSPENSIONS

Horst Bennoit, Sulzbach, and Dieter Schmid, Schwalbach, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 900,610, Apr. 27, 1978, abandoned. This application Jul. 24, 1979, Ser. No. 60,148

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1977, 2719425

Int. Cl.[3] C01B *33/28*

U.S. Cl. 210—772 3 Claims

1. Process for separating zeolite A crystals by filtration from a mother liquor obtained during a hydrothermal synthesis of zeolite A, which consists essentially of filtering the crystal slurry and washing the filter cake mainly consisting of zeolite A with an aqueous 0.05 to 2% by weight sodium hydroxide solution and removing the solid washed filter cake from the filter.

4,260,496

FILTRATION PROCESS AND APPARATUS

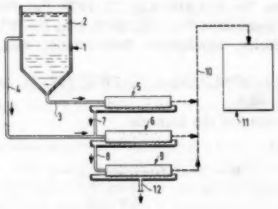
Ekkehard Beer, Bad Schwalbach, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 17, 1979, Ser. No. 79,481

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1978, 2843307

Int. Cl.[3] B01D *33/18*

U.S. Cl. 210—780 19 Claims



1. A filtration process for separating solid, sludge-like and dissolved constituents from effluent, comprising the steps of:

introducing under an elevated pressure the effluent into a tube-shaped filter having a closed end and an open end, said tube-shaped filter being comprised of a semi-permeable material, the point of introduction of the effluent being initially near the closed end of said filter;

moving the point of introduction of the effluent away from the closed end and toward the open end of said filter;

adjusting the rate of introduction of the effluent into said filter to achieve a predetermined content of solids in the concentrate remaining inside of said filter; and

forming a solid-filled envelope of said filter beginning at said closed end and progressing toward said open end of said filter.

4,260,497

METHANESULFONAMIDES AS ANTISTATIC AGENTS FOR LAUNDERED FABRICS

Robert A. Bauman, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 26, 1979, Ser. No. 97,580

Int. Cl.[3] C07C *143/74;* D06M *13/28;* C11D *3/32*

U.S. Cl. 252—8.75 12 Claims

1. Methanesulfonamide antistatic agents substituted on the nitrogen atom and having the formula:

$$RNHSO_2CH_3$$

wherein R is a secondary aliphatic hydrocarbon chain containing at least 8 carbons.

4,260,498

SILANE COATED SILICATE MINERALS AND METHOD FOR PREPARING SAME

Thomas E. Sample, Jr., and John M. Horn, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 772,380, Feb. 28, 1977, Pat. No. 4,137,367, which is a continuation-in-part of Ser. No. 637,339, Dec. 3, 1975, abandoned, which is a continuation of Ser. No. 513,984, Oct. 11, 1974, abandoned. This application Oct. 20, 1978, Ser. No. 953,239

Int. Cl.[3] C09K *7/06;* C10M *1/08*

U.S. Cl. 252—28 1 Claim

1. A grease composition comprising an oil and a gelling agent, said gelling agent comprising an acid-etched chrysotile asbestos with a layer of organo-silane bonded thereto through oxygen-to-silicon bonds and exhibiting an X-ray diffraction pattern characteristic of untreated phyllosilicate mineral.

4,260,499

WATER-BASED LUBRICANTS

Richard S. Fein, Poughkeepsie, and Charles T. Powers, Beacon, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 25, 1978, Ser. No. 937,024

Int. Cl.[3] C10M *3/40, 3/18, 3/04*

U.S. Cl. 252—32.5 4 Claims

1. Water-based lubricants for use in metal working processing and as hydraulic fluids comprising; in weight percent, from 0.005 to 4.0 percent of a C_6–C_{18} alkyl phosphonate or an amine adduct thereof; from 0.005 to 4.0 percent of an ethoxylated oleic acid, ethoxylated dimer acid, or a mixture of ethoxylated rosin fatty acids, from 0.003 to 0.60 percent of an alkali or alkaline earth metal hydroxide, balance water.

4,260,500

MAGNESIUM-CONTAINING COMPLEXES, METHOD FOR THEIR PREPARATION, AND COMPOSITIONS CONTAINING THE SAME

John W. Forsberg, Mentor-on-the Lake, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 882,511, Mar. 1, 1978, abandoned, which is a division of Ser. No. 760,315, Jan. 18, 1977, Pat. No. 4,094,801, which is a continuation-in-part of Ser. No. 681,627, Apr. 29, 1976, abandoned. This application Feb. 21, 1979, Ser. No. 13,509

The portion of the term of this patent subsequent to Jun. 13, 1995, has been disclaimed.

Int. Cl.[3] **C10M** *1/44, 1/48, 1/40, 1/24*

U.S. Cl. 252—33 **25 Claims**

1. A method for preparing a thixotropic noncarbonated magnesium-containing complex which comprises heating, at a temperature above about 30° C., a mixture comprising:

(A) At least one of magnesium hydroxide, magnesium oxide, hydrated magnesium oxide, and a magnesium alkoxide;

(B) At least one oleophilic organic reagent comprising a sulfonic acid, a pentavalent phosphrorus acid, a mixture of a major amount of either of the above with a minor amount of a carboxylic acid, or an ester or alkali metal or alkaline earth metal salt of any of these;

(C) Water, if necessary to convert a substantial proportion of component A to magnesium hydroxide or hydrated magnesium oxide; and

(D) At least one organic solubilizing agent for component B;

the ratio of equivalents of magnesium to the acid portion of component B being at least about 5:1, and the amount of water present, if any, being at least sufficient to hydrate a substantial proportion of component A calculated as magnesium oxide.

4,260,501

LUBRICANT COMPOSITIONS CONTAINING ANTIOXIDANT MIXTURES COMPRISING SUBSTITUTED THIAZOLES AND SUBSTITUTED THIADIAZOLE COMPOUNDS

Joosup Shim, Wenonah, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 11, 1979, Ser. No. 37,966

Int. Cl.[3] **C10M** *1/38*

U.S. Cl. 252—47.5 **2 Claims**

1. A lubricating composition comprising a major proportion of an oleaginous material and an antioxidant amount of a mixture of (1) an adduct of a toluotriazole and n-butyl vinyl ether and (2) tertiary octyl 2,5-dimercapto-1,3,4-thiadiazole.

2. As a new composition of matter, the mixture comprising (1) an adduct of toluotriazole and n-butyl vinyl ether and (2) tertiary octyl 2,5-dimercapto-1,3,4-thiadiazole.

4,260,502

SYNTHETIC DRAWING AND IRONING LUBRICANT

Steven R. Slanker, Tinley Park, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Jun. 7, 1979, Ser. No. 46,348

Int. Cl.[3] **C10M** *1/06*

U.S. Cl. 252—49.5 **10 Claims**

1. A synthetic metal working lubricant characterized by an absence of mineral oil but which is water immiscible and dispersible in water to form oil-in-water emulsions in which said lubricant is in the discontinuous phase, said lubricant consisting essentially of:

A. 20–90% by weight polyisobutylenes having an average molecular weight within the range of approximately 310–610;

B. 80–10% by weight of emulsifying agent (a) polyethylene glycol mono- and diesters of carboxylic acids containing 8–22 carbon atoms in a carbon chain, and (b) carboxylic acids containing 8–22 carbon atoms in a carbon chain, the ratio of (a):(b) being within the range of 1:3 to 3:1.

2. A synthetic metal working lubricant characterized by an absence of mineral oil which is water miscible and dispersible in water to form oil-in-water emulsions in which said lubricant is in the discontinuous phase, said lubricant consisting essentially of:

A. 20–90% polyisobutylenes having an average molecular weight of approximately 310–610;

B. emulsifying agents which are polyethylene glycol mono- and diesters of carboxylic acids containing 8–22 carbon atoms in a carbon chain;

C. carboxylic acids containing 8–22 carbon atoms in a carbon chain; and one or more of the following optional ingredients:

D. lower esters of long chain carboxylic acids containing 8–22 carbon atoms and up to and including 7 carbon atoms in the ester group;

E. oily glycerides of long chain fatty acids;

F. ethoxylated higher alcohols containing 8–22 carbon atoms;

G. ethoxylated long chain carboxylic acids containing 8–22 carbon atoms; and

H. corrosion inhibitors for ferrous and non-ferrous metals,

the total quantity of B and C being within the range of 80–10% by weight, the quantity of C being up to 40% by weight; the quantity of D being within the range of 0.5–30% by weight, the quantity of E being within the range of 0.5–10% by weight; the quantity of F being within the range of 0.5–10% by weight; the quantity of G being within the range of 0.5–10% by weight, and the quantity of H being within the range of a fraction of a percent to 3% by weight.

3. A composition as claimed in claims **1** or **2** emulsified in water to form an oil-in-water emulsion.

9. A method of working non-ferrous and ferrous metals which comprises applying as a lubricant a composition as claimed in claim **3**.

10. A method of working aluminum which comprises applying as a lubricant a composition as claimed in claim **3**.

4,260,503

MERCAPTAN AS AN ADDITIVE FOR LUBRICANTS

Peter Michaelis, Lindenfels, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

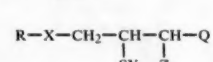
Division of Ser. No. 935,815, Aug. 22, 1978, Pat. No. 4,217,233. This application Nov. 26, 1979, Ser. No. 97,296

Claims priority, application Switzerland, Aug. 31, 1977, 10609/77

Int. Cl.[3] **C10M** *1/20, 1/38;* **C07C** *149/06, 149/20*

U.S. Cl. 252—48.6 **9 Claims**

1. A mercaptan of the formula



wherein

X is an oxygen or sulfur atom or the —COO— group,

Y and Z are each hydrogen, and

Q is —SH, —SR_1 or —S—CH_2—$COOR_1$, each of R and R_1 independently is branched or unbranched C_4–C_{22} alkyl, with the proviso that the groups R and R_1 contain a total number of 8 to 30 carbon atoms.

4,260,504
POLYOXYALKYLENE TRIAL ADDITIVES FOR MINIMIZING DEPOSITS FROM AQUEOUS HEAT-EXCHANGE FLUIDS

Marcel J. Tucoulat, Martiques, and Jacques Lonchampt, Montbeliard, both of France, assignors to Naphtachimie, Paris, France

PCT No. PCT/FR78/00008, § 371 Date Mar. 22, 1979, § 102(e) Date Mar. 22, 1979, PCT Pub No. WO79/00067, PCT Pub Date Feb. 22, 1979

This PCT application filed Mar. 22, 1979, Ser. No. 24,655

Claims priority, application France, Jul. 27, 1977, 77 23192

Int. Cl.[3] **C09K** *5/00;* **C02B** *5/06*

U.S. Cl. 252—73 **7 Claims**

1. A process for preventing the formation of deposits on the walls of the heating or cooling circuits of heat exchangers using an aqueous heat-exchange liquid containing an anti-freeze based on a glycol, said process being characterised in that addition is made to the heat-exchange liquid of from about 0.3 to about 5% by weight of a product of polyaddition of ethylene oxide and propylene oxide on a triol, the ethylene oxide representing from 60% to 90% by weight of the fixed alkylene oxides, the mean molecular weight of the product of polyaddition of ethylene oxide and propylene oxide on a triol being from 500 to 4,000.

4,260,505
TRIS-(POLYALKOXYALKYLATED) ISOCYANURATE COMPOUNDS AND THEIR USE AS FUNCTIONAL FLUIDS

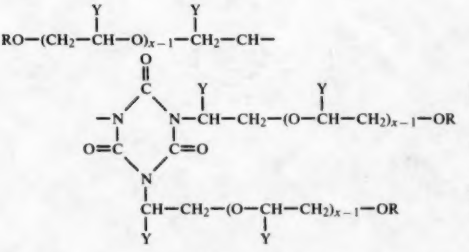
Frank J. Milnes, Guilford; Robert J. Bucko, Hamden, and David F. Gavin, Cheshire, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Oct. 25, 1978, Ser. No. 954,393

Int. Cl.[3] **C10M** *3/26;* **C07D** *251/30, 251/34*

U.S. Cl. 252—77 **14 Claims**

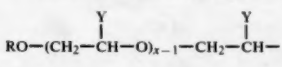
1. In a method wherein a first mechanical effort is converted to pressure at a first location, the pressure is transmitted from said first location to a second location via a hydraulic fluid, and said pressure is converted to a second mechanical effort at said second location; wherein the improvement comprises using as said hydraulic fluid one which comprises an effective amount of a compound having the formula:



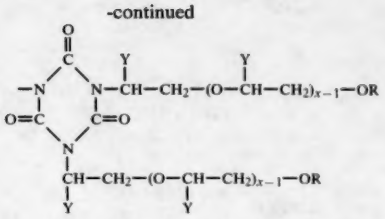
wherein x is an integer from 2–10; Y is either hydrogen or methyl group; and R is a lower alkyl group having from 1–4 carbon atoms.

8. In a method wherein heat is passed from a first heat conductor to a heat transfer fluid at a first location, the heat is transmitted from said first location to a second location via said heat transfer fluid, and said heat is passed from said heat transfer fluid to a second heat conductor at said second location; wherein the improvement comprises

using as said heat transfer fluid one which comprises an effective amount of a compound having the formula:



-continued



wherein x is an integer from 2–10; Y is either hydrogen or methyl group; and R is a lower alkyl group having from 1–4 carbon atoms.

4,260,506
HYDRAULIC PRESSURE DEVICE UTILIZING BIODEGRADABLE HALOGENATED DIPHENYL METHANES

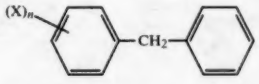
Ralph H. Munch, Webster Groves, Mo., and Quentin E. Thompson, Belleville, Ill., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 921,525, Jul. 13, 1978, abandoned, which is a continuation of Ser. No. 824,480, Aug. 15, 1977, abandoned, which is a continuation of Ser. No. 635,524, Nov. 26, 1975, abandoned, which is a continuation-in-part of Ser. No. 582,486, May 30, 1975, abandoned. This application Jan. 26, 1979, Ser. No. 6,720

Int. Cl.[3] **C10M** *3/24;* **H01B** *3/24*

U.S. Cl. 252—78.1 **4 Claims**

1. A method of operating a hydraulic pressure device which comprises employing as a hydraulic fluid a biodegradable composition comprising one or more compounds represented by the structure:



where each X is chlorine; and n is a whole number from 1 to 4.

4,260,507
SOAP-SYNTHETIC DETERGENT TABLETS

Dennis P. Barrett, Wirral, England, assignor to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 873,636, Jan. 30, 1978, abandoned, which is a division of Ser. No. 739,665, Nov. 8, 1976, abandoned, which is a continuation of Ser. No. 586,781, Jun. 13, 1975, abandoned, which is a continuation of Ser. No. 449,181, Mar. 7, 1974, abandoned, which is a division of Ser. No. 172,220, Aug. 16, 1971, abandoned. This application Sep. 19, 1979, Ser. No. 76,895

Claims priority, application United Kingdom, Aug. 18, 1970, 39809/70

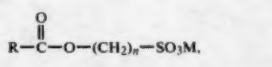
Int. Cl.[3] **C11D** *1/28, 9/30, 9/32, 10/04*

U.S. Cl. 252—121 **1 Claim**

1. A personal washing tablet consisting essentially of an active detergent material and up to 20% by weight of water, said active detergent material being a mixture of:

(a) 60–97% by weight of an alkali metal tallow soap of which at least 75% is the sodium salt, and

(b) 3–40% by weight of a synthetic detergent having the structure



wherein R is a C_5–C_9 alkyl group, n is 1–3, and M is an alkali metal cation.

4,260,508

STABILIZED ALKALI METAL PERCARBONATE POWDER BLEACH

Lodric L. Maddox, Oakland, Calif., assignor to The Clorox Company, Oakland, Calif.

Filed Aug. 15, 1979, Ser. No. 66,575
Int. Cl.[3] C11D *7/54*
U.S. Cl. 252—99 **8 Claims**

1. A separation resistant, stabilized percarbonate powder bleach composition, consisting essentially of:

a plurality of particles, substantially each of said particles comprising sufficient sodium percarbonate to provide from about 1 to about 6 wt. % available oxygen, and a stabilizer for the sodium percarbonate for retarding decomposition of the percarbonate to substantially maintain the available oxygen provided therefrom, said stabilizer in an amount of from about 0.2 wt. % to about 1.0 wt. % of said composition, said stabilizer being a salt with an anionic species selected from the group consisting of tripolyphosphate, orthophosphate, pyrophosphate and mixtures thereof.

4,260,509

SOLVENT HAVING HIGH FLASH POINT

Bernard E. Douda, Bloomfield; Clyde F. Parrish, Terre Haute, and James E. Short, Jr., Switz City, all of Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 4, 1980, Ser. No. 109,692
Int. Cl.[3] C11D *7/30*; C23G *5/02*
U.S. Cl. 252—171 **8 Claims**

1. A high flash point solvent for dissolving a copolymer of vinylidene fluoride and hexafluoropropylene consisting of volume,

between 10 and 40 percent of acetone,

between 20 and 40 percent of methylene chloride, and

between 30 and 70 percent of an acetate selected from the group consisting of amyl acetate and butyl acetate.

4,260,510

CLEANING COMPOSITION

David G. Hey, Northwich, and Robert W. Wheelhouse, Runcorn, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Oct. 19, 1979, Ser. No. 86,671
Claims priority, application United Kingdom, Oct. 23, 1978, 41620/78; Jan. 19, 1979, 01933/79
Int. Cl.[3] C11D *7/50, 7/32, 7/30*; C23G *5/02*
U.S. Cl. 252—171 **11 Claims**

1. A cleaning composition consisting essentially of 89.5% to 96.9% 1,1,2-trichloro-1,2,2-trifluoroethane, 2.5% to 8% ethanol, and 0.1% to 3% methyl acetate.

4,260,511

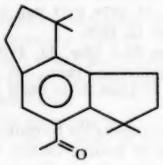
ACETYL HYDRINDACENES, ACETYL INDANES, MIXTURES OF SAME, PROCESSES FOR PREPARING SAME AND ORGANOLEPTIC USES THEREOF

Mark A. Sprecker, Sea Bright; Manfred H. Vock, Locust; Frederick L. Schmitt, Holmdel; Joaquin Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 953,180, Oct. 20, 1978, Pat. No. 4,209,543. This application Jun. 5, 1980, Ser. No. 156,613
Int. Cl.[3] C11D *3/50, 9/44*
U.S. Cl. 252—174.11 **1 Claim**

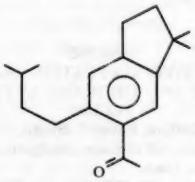
1. A process for augmenting or enhancing the aroma of a solid or liquid anionic, cationic or nonionic detergent comprising the step of intimately admixing with a solid or liquid anionic, cationic or nonionic detergent base from 0.1% up to 1.0% of at least one substance selected from the group consisting of:

(i) 4-Acetyl-3,3,8,8-tetramethyl-as-hydrindacene having the structure:



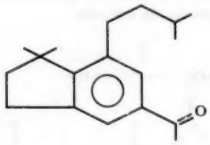
existing in the liquid phase at ambient temperature and pressure;

(ii) 6-Acetyl-5-(3-methylbutyl)-1,1-dimethylindane having the structure:



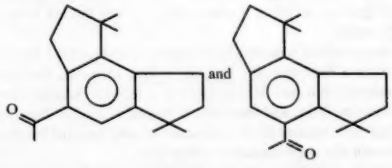
existing in the liquid phase at ambient temperature and pressure;

(iii) 5-Acetyl-7-(3-methylbutyl)-1,1-dimethylindane having the structure:



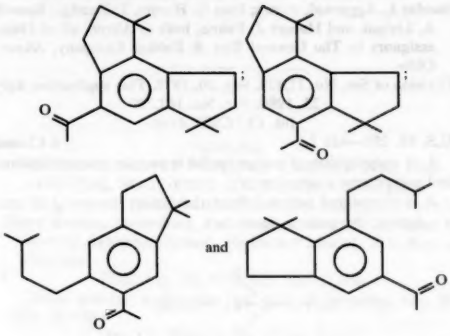
existing in the liquid phase at ambient temperature and pressure;

(iv) A mixture of acetyl hydrindacene having the structures:



existing in the liquid phase at ambient temperature and pressure; and

(v) A mixture of acetyl indanes and acetyl hydrindacenes having the structures:



existing in the liquid phase at ambient temperature and pressure.

4,260,512

NOR-METHYL JASMONATE, PROCESS FOR PRODUCING SAME AND USES OF SAME IN PERFUMES, COLOGNES AND PERFUMED ARTICLES

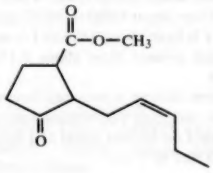
Braja D. Mookherjee, Holmdel; Richard A. Wilson, Westfield; Frederick L. Schmitt, Holmdel, and Manfred H. Vock, Locust, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 106,158, Dec. 21, 1979. This application Jun. 5, 1980, Ser. No. 156,687

Int. Cl.³ C11D *3/50, 9/44*

U.S. Cl. 252—174.11 **1 Claim**

1. A process for augmenting or enhancing the jasmine/floral aroma of a solid or liquid anionic, cationic, nonionic or zwitterionic detergent comprising the step of adding to a solid or liquid anionic, cationic, nonionic or zwitterionic detergent base from 0.01% up to 0.9% of nor-methyl jasmonate having the structure:



4,260,513

DETERGENT COMPOSITIONS

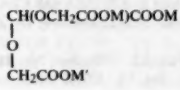
Vincent Lamberti, Upper Saddle River, and Mark D. Ronort, Haworth, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 954,023, Oct. 23, 1978, which is a division of Ser. No. 770,334, Feb. 22, 1977, abandoned, which is a division of Ser. No. 226,213, Feb. 14, 1972, Pat. No. 4,025,450, which is a continuation-in-part of Ser. No. 187,115, Oct. 6, 1971, abandoned. This application Feb. 22, 1980, Ser. No. 123,875

Int. Cl.³ C11D *3/20*

U.S. Cl. 252—174.19 **3 Claims**

1. A detergent composition consisting essentially of a water-soluble organic detergent compound selected from the group consisting of anionic, nonionic, and ampholytic detergent compounds and a detergent builder compound of the general formula:



wherein M and M′ are selected from the group consisting of alkali, metal, ammonium, methyl ammonium, (tetramethyl) ammonium, normal monoethanolamine, diethanolamine, triethanolamine salts, normal monoisopropanol amine salts, normal diisopropanolamine salts and normal monopholine salts, the weight ratio of detergent builder to detergent compound varying from about 1:20 to about 50:1.

4,260,514

URETHANE FOAM COMPOSITIONS

Millard E. Foucht, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 26, 1979, Ser. No. 107,480

Int. Cl.³ C09K *3/00*

U.S. Cl. 252—182 **10 Claims**

1. A composition comprising a first ingredient and a second ingredient, said second ingredient comprising:

(a) the oxyalkylated Mannich base reaction product of phenol, an aldehyde and an alkanol amine;

(b) the oxyalkylated Mannich base reaction product of nonylphenol, an aldehyde and an alkanol amine;

(c) an oxyalkylated polyamine; and,

(d) a brominated diol.

4,260,515

PROCESS FOR HARDENING MICROCAPSULES

Wolfgang Sliwka, Weinheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 5, 1979, Ser. No. 45,653

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1978, 2830539

Int. Cl.³ B01J *13/02*

U.S. Cl. 252—316 **8 Claims**

1. A process for hardening microcapsules having walls of synthetic polymers containing acetylacetate groups reactive toward aldehyde groups, comprising: hardening said microcapsules in an aqueous medium at a temperature from 5° to 100° C. and at a pH of from 3 to 11 by means of an N-methylolmelamine which contains an average of from 2.5 to 6 methylol groups, a C_1–C_4 alkyl ether thereof, or mixtures thereof, wherein at least 1.5 equivalents of said methylol compound, said methylol-ether compound or said mixture thereof are reacted per equivalent of reactive groups in the wall material.

4,260,516

GLYCOSYLATED HEMOGLOBIN STANDARDS

Edwin G. Moore, Libertyville, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Dec. 7, 1979, Ser. No. 101,353

Int. Cl.³ C09K *3/00;* **G01N** *33/48*

U.S. Cl. 252—408 **6 Claims**

1. A standard for determining glycosylated hemoglobin comprising a mixture of hemoglobin and 1% to 25% of the the N-[5-nitrotropon-2-yl] hemoglobin wherein the allosteric binding site of the hemoglobin is blocked.

3. A standard for determining glycosylated hemoglobin comprising a mixture of methemoglobinand 1% to 25% of the N-[5-nitrotropon-2-yl] methemoglobin wherein the allosteric binding site of the methemoglobin is blocked.

5. A standard for determining glycosylated hemoglobin comprising a suspension of red blood cells wherein 1% to 25% of red blood cells have hemoglobin derivatized to form N-[5-nitrotropon-2-yl] hemoglobin wherein a N-[5-nitrotropon-2-yl] group blocks the allosteric binding site of the hemoglobin.

4,260,517
AVAILABLE AROMA OF COCAINE

Warren J. Woodford, 585 Lakeshore Dr. NE., Atlanta, Ga. 30307

Filed Jun. 12, 1978, Ser. No. 914,351
Int. Cl.[3] C09K *3/00*
U.S. Cl. 252—408 12 Claims

1. The method of providing the aroma of "street cocaine" to the olfactory senses, which method comprises the steps of:

volatilizing a synthetically produced mixture consisting essentially of methyl benzoate, methyl cinnamate and the dimethyl ester of truxillic acid;

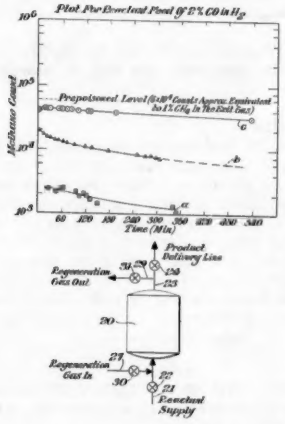
diluting said volatilized mixture of said aromatic compounds with a non-odor masking gaseous diluent; and

contacting said olfactory senses with said volatilized and diluted mixture of aromatic compounds, whereby the aroma of "street cocaine" is perceived.

4,260,518
PROCESS FOR THE REGENERATION OF METALLIC CATALYSTS

James R. Katzer, and Hassan Windawi, both of Newark, Del., assignors to University of Delaware, Newark, Del.

Filed May 15, 1979, Ser. No. 39,130
Int. Cl.[3] B01J *21/20, 23/94, 23/96;* C07C *1/04*
U.S. Cl. 252—411 S 4 Claims



1. A method for the regeneration of a metallic hydrogenation catalyst which had been used as a methanation catalyst for the reaction of CO with H_2 from the class consisting of Ni, Rh, Pd, Ir, Pt and Ru poisoned with sulfur, with or without accompanying carbon deposition, comprising subjecting said catalyst to exposure to oxygen gas in a concentration of about 1–10 ppm. intermixed with an inert gas of the group He, A, Xe, Kr, N_2 and air substantially free of oxygen to an extent such that the total oxygen molecule throughout is in the range of about 10 to 20 times that of the hydrogen sulfide molecular exposure producing the catalyst poisoning while maintaining the temperature in the range of about 300° to 500° C. until said regeneration is completed.

2. The method of claim 1 wherein the gas pressure is maintained in the general atmospheric pressure range.

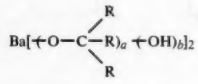
4,260,519
PREPARATION OF BARIUM-ALKOXIDE SALTS

Sundar L. Aggarwal, Akron; Ivan G. Hargis, Tallmadge; Russell A. Livigni, and Hubert J. Fabris, both of Akron, all of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 77,428, Sep. 20, 1979. This application Apr. 22, 1980, Ser. No. 142,790
Int. Cl.[3] C08F *4/48*
U.S. Cl. 252—431 L 6 Claims

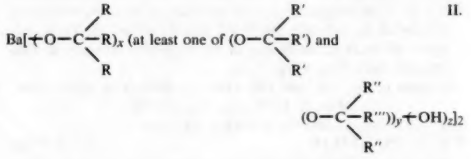
1. A composition of matter useful in anionic polymerization and comprising a complex of

A. a compound selected from the group consisting of and having the general formula



I.

where at least one R is a methyl or cyclohexyl radical and where the remaining Rs are selected from the group consisting of alkyl and cycloalkyl radicals having from 1 to 6 carbon atoms which may be the same or different, and where the mol ratio of a to b is from about 99.5:0.5 to 88:12 and



II.

where the Rs are as defined above, where the R's are alkyl radicals of from 2 to 6 carbon atoms which may be the same or different, where the R''s are alkyl radicals of from 1 to 4 carbon atoms which may be same or different and where R''' is a hydrocarbon radical having a molecular weight of from about 250 to 5,000, where the mol ratio of x+y to z is from about 100:0 to 88:12 and where the mol ratio of x to y is from about 1:0.3 to 1:1, said compound A containing not greater than about 0.1% by weight of nitrogen and

B. a hydrocarbon lithium compound having from 2 to 200 carbon atoms and from 1 to 6 lithium atoms, the mol ratio of A to B based on barium metal and lithium metal being from about 0.60:1 to 1.1:1.

4,260,520
CARRIER-SUPPORTED CATALYST AND PROCESS FOR MAKING IT

Heinz Erpenbach, Cologne; Klaus Gehrmann, and Herbert Joest, both of Erfstadt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 13, 1979, Ser. No. 93,868
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1978, 2849715
Int. Cl.[3] B01J *27/14*
U.S. Cl. 252—437 9 Claims

1. A carrier-supported catalyst comprising oxides of cobalt and phosphorus and at least one of the oxides of molybdenum

and potassium in the atomic ratio of $Co_1P_{1-2}Mo_{0-0.05}K_{0-0.5}$ on a porous carrier material.

4,260,521

METAL CATALYST WITHOUT CARRIER FOR THE PARTIAL SOOT-FREE OXIDATION OF LIQUID HYDROCARBONS WITH AIR

Hana Kostka, Nuremberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 20, 1979, Ser. No. 67,898

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1978, 2837850

Int. Cl.[3] B01J *21/04, 21/06, 27/22*

U.S. Cl. 252—443 **7 Claims**

1. A metal catalyst without a carrier for the soot-free generation of a fuel gas mixture containing carbon monoxide, hydrogen and gaseous hydrocarbons by the partial oxidation of liquid hydrocarbons with air, with air numbers below 0.3 and at temperatures of from about 600° to about 800° C., wherein said metal catalyst is prepared by the steps comprising:

forming shaped bodies composed of an aluminum alloy having from about 15 to about 35 wt. % silicon based on the total weight of the alloy,

subjecting said shaped bodies to a heat treatment for at least 10 hours at a temperature of from about 600° to about 800° C. in the presence of an oxidizing atmosphere for the partial conversion of the aluminum into α-Al_2O_3, and for at least 10 hours at a temperature of from about 600° to about 800° C. in the presence of gaseous hydrocarbons for the partial conversion of the silicon into β-SiC.

4,260,522

Patent Not Issued For This Number

4,260,523

MAGNETIZED ACTIVE CARBON COMPOSITION

Kenkichi Tsukamoto, Tokyo, Japan, assignor to Siako Tsukamoto, Tokyo, Japan

Continuation-in-part of Ser. No. 661,355, Feb. 25, 1976, abandoned. This application Jan. 15, 1979, Ser. No. 3,390

Claims priority, application Japan, Feb. 26, 1975, 50/24215

Int. Cl.[3] B01J *21/18;* **C04B** *35/64, 35/26;* **A24D** *1/04*

U.S. Cl. 252—447 **14 Claims**

1. A magnetized active carbon composition, which consists essentially of a mixture of 100 parts of active carbon and 5–100 parts by weight of a magnetized ferromagnetic material, said ferromagnetic material having been previously subjected to a saturation magnetization treatment by application of a magnetic treatment prior to preparation of the mixture and said ferromagnetic material being at least one of a member selected from the group consisting of ferrite of the spinel-type structure, ferrite of the magnetoplumbite-type structure, ferrite of the garnet-type structure, ferrite of the probeskite-type structure, ferrite of the ilmenite-type structure, ferrite of the rutile-type structure, ferrite of the ferroxplana-type structure, alloy of the precipitation hardening-type structure, alloy of the γ-α transformation-type structure, alloy of the supper-lattice-type structure and alloy of the rare earth-cobalt-type structure.

4,260,524

HOLLOW CATALYST CARRIER AND HOLLOW CATALYST MADE OF TRANSITION-ALUMINA AND PROCESS FOR PRODUCTION THEREOF

Koichi Yamada; Kunio Nakazato; Kazuo Horinouchi; Seiichi Hamano, and Masahide Mouri, all of Niihama, Japan, assignors to Sumitomo Aluminium Smelting Company, Limited, Osaka, Japan

Filed May 24, 1979, Ser. No. 42,151

Int. Cl.[3] B01J *21/04, 35/04*

U.S. Cl. 252—463 **12 Claims**

1. A hollow catalyst carrier which consists essentially of an integral calcined product comprising predominantly a transition-alumina and having a void ratio in the cross section of not less than 3%, a specific surface area of not less than 5 m^2/g, a bulk density of 0.8 to 1.8 g/cm^3, a pore volume of 0.3 to 0.8 cm^3/g, a compressive strength in the extrusion direction of not less than 20 kg/cm^2 and at least one hole in the extrusion direction, said calcined product being prepared by subjecting a powder containing a rehydratable alumina to an extrusion molding, rehydrating the molded product and followed by calcining.

4,260,525

SINGLE-CRYSTAL HEXABORIDES AND METHOD OF PREPARATION

Gregory H. Olsen, Dayton, and Alfred V. Cafiero, Old Bridge, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 27, 1978, Ser. No. 963,817

Int. Cl.[3] H01B *1/06*

U.S. Cl. 252—521 **22 Claims**

1. A method of fabricating a single crystal metal hexaboride comprising:

mixing a metal oxide, nitrate or carbonate compound of the metal component(s) of the hexaboride and boron with sufficient aluminum to dissolve the boron at a reaction temperature of from about 1200° C. to about 1600° C.;

heating the mixture to a temperature of from about 1200° C. to about 1600° C. for a sufficient time to form said single crystal metal hexaboride;

cooling the mixture; and

dissolving said aluminum from said single crystal hexaboride with an acid.

10. The method according to claim 1 wherein the single crystal metal hexaboride has the formula

$$L_xM_zR_{1-x-z}B_6$$

wherein L is selected from the group consisting of Cs, Ba, La and the lanthanides, M and R are selected from the group consisting of Cs, Ba, Y, La and the lanthanides, $x<0$ but $x \cong 1$, $z \cong 0$ but $z<1$ and $1-x-z<1$.

4,260,526

PERFUME COMPOSITIONS CONTAINING 2,6,10,10-TETRA-METHYL-1-OXA-SPIRO[4,5]-DECAN-7-ONE

Roman Kaiser, Uster, and Peter Naegeli, Wettingen, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

Division of Ser. No. 868,632, Jan. 11, 1978, Pat. No. 4,190,591. This application Jul. 30, 1979, Ser. No. 62,457

Claims priority, application Austria, Jan. 21, 1977, 364/77; Switzerland, Jul. 27, 1977, 9281/77

Int. Cl.[3] C11B *9/00*

U.S. Cl. 252—522 R **2 Claims**

1. An odorant composition comprising an effective amount

of 2,6,10,10-tetramethyl-1-oxa-spiro[4,5]-decan-7-one and at least one other olfactory substance with the exception that the resulting composition is not identical to a naturally occurring mixture and the 2,6,10,10-tetramethyl-1-oxa-spiro[4,5]-decan-7-one is present other than as part of a naturally occurring mixture.

4,260,527

USE OF 1-ACETYL-22,6-TRIMETHYL CYCLOHEXENE-1 IN AUGMENTING OR ENHANCING THE AROMA OF PERFUMES AND COLOGNE

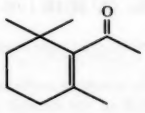
Robert W. Trenkle, Bricktown; Braja D. Mookherjee, Holmdel; John B. Hall, Rumson; Robin Kasper, Eatontown; Manfred H. Vock, Locust; Ronald Schreck, Keyport; Edward J. Granda, Englishtown, and Joaquin F. Vinals, Red Bank, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 88,451, Oct. 26, 1979, Pat. No. 4,250,332. This application Jun. 5, 1980, Ser. No. 156,678

Int. Cl.³ G11B *9/00*

U.S. Cl. 252—522 R **1 Claim**

1. The process for augmenting or enchancing the aroma of a perfume composition or a cologne comprising the steps of adding to a perfume base or to a cologne base an aroma augmenting or enhancing quantity of a compound having the structure:



4,260,528

AQUEOUS HIGH VISCOSITY LIQUID DISHWASHER COMPOSITIONS

Daniel J. Fox; David Van Blarcom, both of Hawthorne, and Fred K. Rubin, Leonia, all of N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed Jun. 18, 1979, Ser. No. 49,996

Int. Cl.³ C11D *3/32*

U.S. Cl. 252—525 **9 Claims**

1. A liquid automatic dishwasher detergent having a viscosity of about 13,000 cps. to about 150,000 cps. at 25° C., and a pH of about 11 to about 13, comprising

(a) a surfactant;

(b) about 10% to about 70% of a detergency builder or detergency builder mixture;

(c) sufficient alkalinity agent to adjust the pH of said detergent to about 11 to about 13;

(d) about 0.5% to about 5% of a thickening agent selected from the group consisting of polygalactomannan based polysaccharide gums and derivatives thereof, biopolymeric gums formed by fermentation of glucose, gum tragacanth, starch, dextrin, methyl vinyl ether and maleic anhydride copolymers, and mixtures thereof;

(e) about 0.3% to about 10% of a polyhydric alcohol selected from the group consisting of glycerol, ethylene glycol, propylene glycol, and mixtures thereof;

(f) about 0.5% to about 8% urea; and

(g) water.

4,260,529

DETERGENT COMPOSITION CONSISTING ESSENTIALLY OF BIODEGRADABLE NONIONIC SURFACTANT AND CATIONIC SURFACTANT CONTAINING ESTER OR AMIDE

James C. Letton, Forest Park, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 811,218, Jun. 29, 1977, abandoned. This application Jun. 26, 1978, Ser. No. 919,344

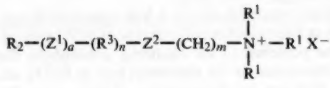
Int. Cl.³ C11D *1/835, 1/62*

U.S. Cl. 252—547 **36 Claims**

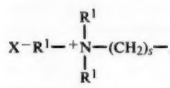
1. A detergent composition, containing no more than about 20% of phosphate builder materials, having a pH of no greater than about 11 in the laundry solution, and which is substantially free of oily hydrocarbon materials, comprising from about 5% to about 100% of a surfactant mixture consisting essentially of:

(a) a biodegradable nonionic surfactant having the formula $R(OC_2H_4)_nOH$ wherein R is a primary or secondary alkyl chain of from about 8 to about 22 carbon atoms and n is an average of from about 2 to about 12, having an HLB of from about 5 to about 17; and

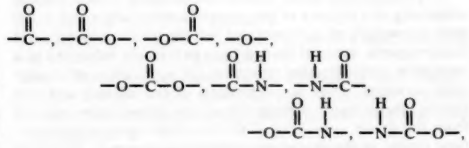
(b) a cationic surfactant having the formula



wherein each R^1 is C_1 to C_4 alkyl or hydroxyalkyl; R^2 is C_5 to C_{30} straight or branched chain alkyl, alkenyl, alkylbenzyl, or alkyl phenyl group or



wherein s is from 0 to 5; R^3 is C_1 to C_{20} alkylene or alkenylene; a is 0 or 1, n is 0 or 1, and n is 1 when a is 1, m is from 1 to 5; Z^1 and Z^2 are each selected from the group consisting of:



and wherein at least one of said groups is selected from the group consisting of ester, reverse ester, amide and reverse amide; and X is an anion which makes the surfactant at least water-dispersible;

wherein the ratio of said nonionic surfactant to said cationic surfactant is in the range of from about 1:1 to about 100:1.

4,260,530

PROCESS FOR THE PREPARATION OF POLYURETHANE RESINS USING STABLE DISPERSIONS AS A STARTING COMPONENT

Artur Reischl; Hanns Müller, and Kuno Wagner, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 829,363, Aug. 31, 1977, Pat. No. 4,206,109. This application Jun. 7, 1979, Ser. No. 46,585

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1976, 2639254

Int. Cl.[3] C08L *61/10, 75/10*

U.S. Cl. 260—29.3 10 Claims

1. In a process for the production of polyurethane resins comprising reacting

(A) organic polyisocyanates with

(B) compounds with hydroxyl groups containing high molecular weight substances dispersed therein the improvement wherein the substances used as component (B) are stable dispersions of polyaddition and polycondensation products in compounds containing hydroxyl groups as dispersing agents, said stable dispersions prepared by reacting

(a) organic polyisocyanates with

(b) compounds having primary and/or secondary amino groups and/or primary hydroxyl groups in

(c) organic compounds having at least one hydroxyl group,

compounds (c) having secondary hydroxyl groups if compounds (b) have primary hydroxyl groups, characterized in that polycondensation of substances capable of aminoplast and/or phenoplast formation is carried out in the hydroxyl containing dispersing agent (c) simultaneously with the polyisocyanate polyaddition reaction.

4,260,531

INK COMPOSITION FOR PRINTING ON POLYOLEFIN

Joseph Wachtel, Buffalo Grove, and Josephine Aguilar, Elk Grove Village, both of Ill., assignors to A. B. Dick Company, Niles, Ill.

Filed Jul. 2, 1979, Ser. No. 53,818

Int. Cl.[3] C08L *33/08*

U.S. Cl. 260—29.6 E 12 Claims

1. A jet printing ink composition having a pH within the range of 7.0–10.5 in which the printing ink composition contains 5–20% by weight styrene-acrylic copolymer resin, 3–12 parts by weight plasticizer per 100 parts by weight resin, 0–20 parts by weight modifying resin per 100 parts by weight of resin, 0.5–6% by weight colorant, 0–10% by weight evaporation retardant, the remainder being water and alcohol in the ratio of 80–10 parts by weight alcohol to 20–90 parts by weight water, in which the alcohol is selected from the group consisting of methanol, ethanol, isopropyl alcohol and n-propyl alcohol.

4,260,532

AQUEOUS ISOCYANATE EMULSIONS PREPARED WITH POLYGLYCOL AND POLYMERIZED UNSATURATED ACID AMIDE

Wolfgang Reuther, Heidelberg; Adolph Segnitz, Bad Durkheim; Otto Wittmann, Frankenthal, and Hermann Schatz, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 11, 1979, Ser. No. 56,525

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1978, 2831674

Int. Cl.[3] C08L *33/24, 39/06*

U.S. Cl. 260—29.6 HN 4 Claims

1. In the process for the manufacture of aqueous polyisocyanate emulsions wherein said polyisocyanate is emulsified in the presence of a polyglycol, the improvement comprises replacing said polyglycol partially or wholly with a water-soluble polymeric amide obtained by the polymerization of an olefinically unsaturated acid amide.

4,260,533

VINYL ACETATE/ALLYLIC AMINE COPOLYMER EMULSIONS FOR PAINT HAVING WET ADHESION PROPERTIES

John G. Iacoviello, Somerville, N.J., and Wiley E. Daniels, Easton, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Aug. 27, 1979, Ser. No. 69,644

Int. Cl.[3] C08L *55/00*

U.S. Cl. 260—29.6 TA 9 Claims

1. A latex paint composition comprising water, pigment, thickener and about 40–70% by weight resin particles, wherein said resin particles contain at least 25% by weight vinyl acetate units and 0.5–10% by weight of units of an allylic amine wet adhesion monomer, said allylic amine having at least one allylic group and at least one hydrogen atom attached directly to the amino nitrogen atom.

4,260,534

ASBESTOS-FREE VINYL FLOOR TILE COMPOSITION AND METHOD FOR ITS MANUFACTURE

John G. Hanson, Robbinsville, N.J., and Merrill M. Smith, Morrisville, Pa., assignors to American Biltrite, Inc., Lawrenceville, N.J.

Filed Feb. 8, 1979, Ser. No. 10,605

Int. Cl.[3] C08K *5/12, 3/34, 3/20*

U.S. Cl. 260—31.8 R 17 Claims

1. In a composition suitable for the manufacture by a continuous process of vinyl floor tile of the type comprising a minor proportion of plasticized vinyl chloride polymer and a major proportion of mineral filler, said plasticized vinyl chloride polymer constituting about 16 to 25% by weight of the composition and being substantially uniformly mixed with said mineral filler, the improvement wherein said mineral filler comprises an asbestos free mixture consisting essentially of a Kaolin clay and bulking agent, said Kaolin clay constituting about 10 to 40% by weight of the composition and said mineral filler constituting about 35 to 64% by weight of the composition.

4,260,535

ANTIFOULANT COMPOSITION AND METHOD

David B. Russell, Westfield, N.J., assignor to M&T Chemicals Inc., Woodbridge, N.J.

Filed Sep. 4, 1979, Ser. No. 71,929

Int. Cl.[3] C08K *5/01*

U.S. Cl. 260—33.6 UA 10 Claims

1. In an improved process for protecting marine surfaces against growth of fouling organisms, the said process comprises treating said marine surface with a coating composition containing:

(a) 1 to 30% by weight of the total composition of a biologically active film-forming polymer derived in part from a first triorganotin compound exhibiting the formula $R_3SnOOCR'$

wherein

R is selected from the group consisting of alkyl, cycloalkyl, and aryl radicals, and

R′ is a polymerizable group selected from the group consisting of vinyl, α-methylvinyl, and phenylvinyl radicals,

wherein

repeating units derived from said compound constitute from 25–80 mole % of the total repeating units present in said polymer, the remaining 20–75 mole % of said repeating units being derived from at least one ethylenically unsaturated compound that is copolymerizable with said first triorganotin compound,

(b) 1 to 50% by weight of the total composition of at least one metalliferous pigment, and

(c) 30 to 80% by weight of the total composition of an inert diluent,

the improvement which consists of the presence in said composition of from

0.01 to 10% by weight of the total composition of a biologically inactive film-forming polymer derived in part from a second triorganotin compound exhibiting the formula $R_3^2SnOOCR^3$,

wherein

R^2 is selected from the same group as R and

R^3 is selected from the same group as R' and the repeating units derived from said triorganotin compound constitute from 1 to 15 mole % of the total repeating units present, the remaining 85–99 mole % of said repeating units being derived from at least one ethylenically unsaturated compound that is copolymerizable with said second triorganotin compound.

4,260,536

SILICONE COMPOSITION PRODUCED BY EXTRUSION AND HOT AIR VULCANIZATION

Masaharu Yonezawa, Gumma, and Masayuki Hatanaka, Ouramachi, both of Japan, assignors to General Electric Company, Waterford, N.Y.

Filed Sep. 18, 1978, Ser. No. 943,423

Claims priority, application Japan, Sep. 26, 1977, 52-115366

Int. Cl.³ C08L *83/06*

U.S. Cl. 260—37 SB **21 Claims**

1. A composition which is capable of being extruded by an extruder and vulcanized by hot air, which is not sticky in the cured form, consisting essentially of: (a) 100 parts by weight of organopolysiloxane gum composed of units expressed by the general formula $R_a^1 SiO_{(4-a)/2}$ where R^1 is a substituted or a non-substituted monovalent hydrocarbon group, of which 0.02–2 mole percent is an alkenyl group and a varies in the range of 1.98–2.00; (b) 30–100 parts by weight of a silica filler; (c) 0.1–1.0 parts by weight of organohydrogenpolysiloxane possessing units expressed by the general formula $R_b^2HcSiO_{(4-b-c)/2}$ where R^2 is a substituted or non-substituted monovalent hydrocarbon group, b and c are positive values, and the total of b plus c falls in the 1.0–3.0 range, and wherein the molecule contains at least 2 silicon bonded hydrogen atoms; (d) 0.3–3 parts by weight of an aromatic acylorganicperoxide, and (e) 0.1–2 parts by weight of an alkylorganicperoxide.

4,260,537

STABILIZED POLYCARBONATE COMPOSITIONS

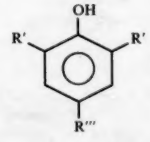
Frank J. Limbert, Pittsburgh, Pa., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Feb. 12, 1976, Ser. No. 657,653

Int. Cl.³ C08K *5/13, 5/34, 5/52*

U.S. Cl. 260—45.85 B **21 Claims**

1. In a polycarbonate comprising a polycarbonate resin having sufficient halogen therein to provide flame retardant characteristics to said polycarbonate, the improvement comprising having intimately mixed with said polycarbonate a stabilizing amount of a hindered phenol of the structural formula:



wherein R' is a bulky hydrocarbon alkyl group having 4 to 22 carbon atoms and having sufficient bulk to prevent inactivating reactions of the stabilizing hydroxyl group, R''' is an organic, unbranched residue having at least 10 carbon atoms which may contain an alkyl-oxyl carbonyl alkyl group, and said hindered phenol has a molecular weight between 450 and 1600.

4,260,538

MATURED MOLDABLE THERMOSETTING DUAL POLYESTER RESIN SYSTEM

Kenneth A. Iseler, Richmond, and Mayur S. Shah, Sterling Heights, both of Mich., assignors to The Budd Company, Troy, Mich.

Filed Sep. 27, 1979, Ser. No. 79,272

Int. Cl.³ C08K *3/22;* **C08L** *67/06*

U.S. Cl. 260—40 R **29 Claims**

1. A maturated moldable thermosetting resin-containing composition for molding articles under pressure having a filler selected from the group consisting of (a) reinforcing fiber, (b) inert filler, and (c) a combination of both (a) and (b), dispersed therein, in which the curable resin binder comprises the reaction product, in intimate contact with said filler of

A. a faster-reactive unsaturated first polyester resin having (1) a ratio of hydroxyl groups to carboxyl groups between about 5.7 to 0.8, and (2) an acid number of at least 18, and (3) an average molecular weight between about 800 and 5000, and (4) containing a minor amount of isophthalic acid, and

B. a slower-reactive unsaturated second polyester resin having (1) a ratio of hydroxyl groups to carboxyl groups between about 5.7 to 0.8, and (2) an acid number of at least 8, and (3) an average molecular weight between about 800 and 5000, and (4) being essentially free of isophthalic acid, and

C. (1) an organic polyisocyanate in an amount sufficient to react with at least thirty percent, but not more than one hundred five percent, of the hydroxyl groups present, and

C. (2) a metallic oxide or hydroxide selected from the group consisting of calcium and magnesium oxides and hydroxides in an amount sufficient to react with at least thirty percent, but not more than seventy-five percent, of the carboxyl groups present, said reaction product containing dispersed therein

D. an aliphatically-unsaturated monomer,

E. a free radical polymerization catalyst,

F. an internal mold release agent, and

I. a thermoplastic low-shrink additive,

said resin binder comprising at least about eight weight percent of said composition.

4,260,539

POLYPROPYLENE/GLASS FIBER/IMIDO PREPOLYMER BASED COMPOSITIONS

Jean-Louis Locatelli, Vienne, and Louis Macabrey, Mitry-Le Neuf, both of France, assignors to Rhone-Poulenc Industries, Paris, France

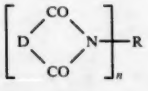
Filed Nov. 17, 1978, Ser. No. 961,769

Claims priority, application France, Nov. 18, 1977, 77 34685; Jun. 30, 1978, 78 19586

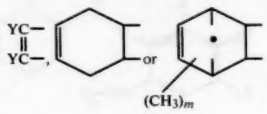
Int. Cl.³ C08K *9/00*

U.S. Cl. 260—42.14 **17 Claims**

1. A composition of matter comprising (A) polypropylene, (B) glass fibers, and (C) a prepolymer which comprises the reaction product of (i) a polyimide of the structural formula:



in which D is:



wherein Y is H, CH_3 or Cl, and m is 0, 1 or 2, R is an organic radical of valence n, containing 2 to 50 carbon atoms, and n is a number with an average value of from 2 to 5, with (ii) N-vinyl-2-pyrrolidone.

4,260,540

AZO DYE PIGMENTS CONTAINING 4-QUINAZOLINONE MOIETIES

Meinhard Rolf; Rütger Neeff, and Walter Müller, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

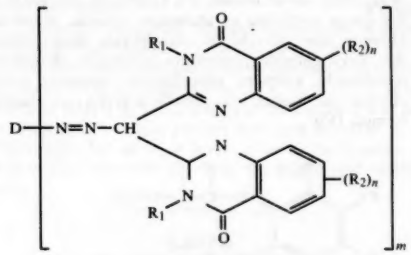
Continuation-in-part of Ser. No. 837,404, Sep. 28, 1977. This application Mar. 20, 1979, Ser. No. 22,295

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1978, 2812635

Int. Cl.[3] **C09K** *17/00;* **C09B** *29/22, 29/36, 62/08*

U.S. Cl. 260—42.21 **6 Claims**

1. A pigmented organo macromolecular material comprising an organo macromolecular material and an azo pigment of the formula



wherein

D is the radical of an aromatic or hetero-aromatic amine which is free from sulphonic acid groups;

m is the integer 1 or 2;

n denotes 0, 1, 2, 3 or 4;

R_1 is hydrogen or C_1-C_4 alkyl; and

R_2 is chlorine, bromine, Cl_1–C_4-alkyl, C_1–C_4-alkoxy, nitro, trifluoromethyl, cyano, carboxamide, C_1–C_4-alkyl-carboxamide, phenylcarboxamide, C_1–C_4 alkylphenylcarboxamide, C_1–C_4-alkoxyphenylcarboxamide, fluoro-,chloro-, bromo-phenylcarboxamide, nitrophenylcarboxamide, benzylcarboxamide, C_1–C_4-alkylbenzylcarboxamide, C_1–C_4-alkoxybenzylcarboxamide, fluoro-,chloro-, bromo-benzylcarboxamide, nitrobenzylcarboxamide, sulphonamide, C_1–C_4-alkylsulphonamide, phenylsulphonamide, C_1–C_4-alkylphenylsulphonamide, C_1–C_4-alkoxyphenyl-sulphonamide, fluoro-,chloro-, bromo-phenylsulphonamide, nitrophenylsulphonamide, benzylsulphonamide, C_1–C_4- alkylbenzylsulphonamide, C_1–C_4-akloxybenzyl-sulphonamide, fluoro-, chloro-, bromo-benzyl sulphonamide, nitrobenzylsulphonamide, C_1–C_4-alkylcarbonylamino, benzoylamino, chlorobenzoylamino, C_1–C_4-alkylbenzoylamino, C_1–C_4-alkoxybenzoylamino, nitrobenzoylamino, phenylamino, C_1–C_4-alkyl-phenylamino, C_1–C_4-alkoxyphenylamino, fluoro-, chloro-, bromo-phenylamino, or nitrophenylamino.

4,260,541

METHOD FOR PRODUCING INTERNALLY PLASTICIZED POLY(VINYL CHLORIDE)

Miloslav Kolinsky, Prague; Vendelin Macho, Novaky; Juraj Porubsky, Bratislava; Vladislav Kuska, Novaky; Jaroslav Manas; Stanislav Sykora, both of Gottwaldov, and Rudolf Lukas, Prague, all of Czechoslovakia, assignors to Ceskoslovenska Akademie Ved, Prague, Czechoslovakia

Filed Sep. 18, 1979, Ser. No. 76,766

Int. Cl.[3] **C08L** *67/02*

U.S. Cl. 260—45.8 NT **3 Claims**

1. A method for producing internally plasticized poly(vinyl-chloride) which is suitable primarily for the purposes of earth insulation and medical care, wherein vinyl chloride is polymerized in an aqueous dispersion medium in the presence of up to 50 weight % based on vinyl chloride of a polyester polymeric plasticizer, which is prepared by polyesterification of dicarboxylic acids selected from the group consisting of adipic and sebacic acid and diols having 2 to 8 carbon atoms in the molecule selected from the group comprising ethylene glycol, diethylene glycol, 1,2-propandiol and 1,4-butandiol in the presence up to 5 wt.% of a stabilizer of the polymer chain structure, to effect a 50–90% conversion of the vinyl chloride at temperatures from −20° to +80° C. and a pressure up to 1 MPa; and wherein the resulting polymer is isolated.

4,260,542

REACTION PRODUCTS OF METAL OXIDES AND SALTS WITH PHOSPHORUS COMPOUNDS

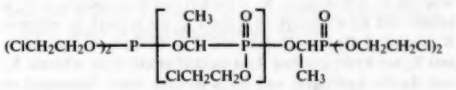
Samuel F. Joyce, III, Ballwin, Mo.; Albert W. Morgan, Collinsville, Ill.; Norman W. Touchette, and William Vanderlinde, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 898,590, Apr. 21, 1978, Pat. No. 4,206,133, which is a division of Ser. No. 724,192, Sep. 17, 1976, Pat. No. 4,133,823, which is a continuation-in-part of Ser. No. 553,947, Feb. 28, 1975, abandoned, which is a continuation of Ser. No. 223,295, Feb. 3, 1972, abandoned. This application Oct. 25, 1979, Ser. No. 88,308

Int. Cl.[3] **C08K** *5/53*

U.S. Cl. 260—45.75 R **7 Claims**

1. A composition comprising a synthetic polymer and a reaction product of a phosphite/phosphonate of the formula



wherein n has a value from 0 to 4 and a compound selected from salts and oxides of a metal selected from the group consisting of lithium, sodium, potassium, rubidium, magnesium, calcium, strontium, barium, titanium, chromium, zirconium, vanadium, molybdenum, tungsten, manganese, iron, ruthenium, nickel, palladium, platinum, cobalt, copper, silver, gold, zinc, cadmium, mercury, tin, lead, antimony, aluminum and mixtures thereof.

4,260,543

CRYSTALLINE N-FORMIMIDOYL THIENAMYCIN

Thomas W. Miller, Carteret, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 921,379, Jul. 3, 1978, abandoned. This application Apr. 30, 1979, Ser. No. 33,932

Int. Cl.[3] **C07D** *487/04*

U.S. Cl. 260—245.2 T **1 Claim**

1. Crystalline N-formimidoyl thienamycin monohydrate, having the following X-ray powder diffraction:

Peak Position		Intensity	Peak Position		Intensity
2-θ (CuKα)	d-Spacing (Å)	I/I_o	2-θ (CuKα)	d-Spacing (Å)	I/I_o
9.75	9.07	100	26.9	3.31	75
11.35	7.80	40	28.7	3.11	37
13.85	6.39	11	29.9	2.99	17
14.5	6.11	4	30.8	2.90	7
15.75	5.63	14	31.85	2.81	12
17.5	5.06	30	32.6	2.75	10
18.9	4.69	27	32.9	2.72	10
19.6	4.53	12	33.4	2.68	5
20.0	4.44	14	33.9	2.64	10
21.45	4.14	30	34.8	2.58	26
21.75	4.08	36	35.6	2.52	14
22.3	3.98	45	37.0	2.43	5
22.9	3.88	30	38.3	2.35	9
23.3	3.82	28	39.3	2.29	6
24.3	3.66	33	40.0	2.25	9
25.35	3.52	24	42.0	2.20	14
25.8	3.45	20	42.4	2.14	18

4,260,544

HALOGENOMETHYLENE-INDOXYLS

Niklaus Bühler, Rheinfelden; Hans Bosshard, Basel, and Alfred Sallmann, Bottmingen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

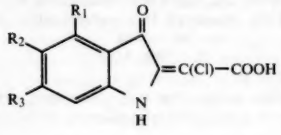
Filed Feb. 9, 1978, Ser. No. 876,375

Claims priority, application Luxembourg, Feb. 11, 1977, 76754

Int. Cl.³ C07D *209/18*

U.S. Cl. 260—326.13 C **16 Claims**

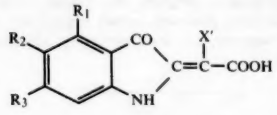
1. A compound of formula Ia



(Ia)

wherein R_1 is hydrogen, R_2 is methyl and R_3 is chloro, cr R_2 is bromo and R_3 is methyl; or R_2 and R_3 are methyl; or wherein R_1 is methyl, R_2 is hydrogen, and R_3 is methyl; or wherein R_1 and R_2 are hydrogen and R_3 is methyl or ethyl; or wherein R_1 and R_3 are hydrogen, and R_2 is methyl, ethyl, isopropyl or n-butyl; or wherein R_1 is hydrogen, and R_2 and R_3 together are alkylene having 3 carbon atoms.

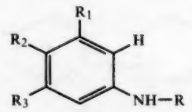
7. A process for the preparation of a compound of formula Ib



Ib

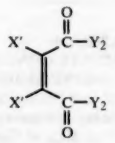
wherein R_1 is hydrogen, R_2 is methyl and R_3 is chloro, or R_2 is bromo and R_3 is methyl; or R_2 and R_3 are methyl; or wherein R_1 is methyl, R_2 is hydrogen, and R_3 is methyl; or wherein R_1 and R_2 are hydrogen, and R_3 is methyl or ethyl; or wherein R_1 and R_3 are hydrogen, and R_2 is methyl, ethyl, isopropyl or n-butyl; or wherein R_1 is hydrogen, and R_2 and R_3 together are alkylene having 3 carbon atoms; and X' is chlorine or bromine, which consists essentially of

reacting a compound of formula IIb



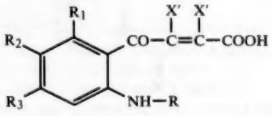
(IIb)

wherein R_1, R_2 and R_3 are defined as above and R is alkanoyl having 1–6 carbon atoms or benzoyl, in substantially stoichiometric amounts with a compound of formula III



(III)

wherein the two X's independently of one another are chlorine or bromine, and one of Y_1 and Y_2 is halogen and the other is —OH or —O—alkyl having 1–6 carbon atoms; or Y_1 and Y_2 together form the grouping —O—; in the melt or in an inert organic solvent selected from the group consisting of chlorinated aliphatic hydrocarbons, chlorinated atomatic hydrocarbons, n-pentane, n-hexane, nitrobenzene, nitromethane and carbon disulfide, at a temperature between about 0° and 130° C. in the presence of an excess molar amount of a Lewis acid selected from the group consisting of aluminum chloride, aluminum bromide, zinc chloride, tin tetrachloride, boron trifluoride, ferric chloride, phosphorus trichloride, phosphorus oxychloride, antimony pentafluoride, antimony pentachloride and titanium tetrachloride to give a compound of formula IVb



(IVb)

wherein R_1, R_2, R_3, R and X' are as defined above; in the reaction mixture; and then

adding the reaction mixture containing the compound of formula IVb to an aqeuous medium at a temperature between about 0° and 100° C. to give the compound of formula Ib.

4,260,545

N-SUBSTITUTED HALOGENOMETHYLENEINDOXYLS

Niklaus Bühler, Rheinfelden; Hans Bosshard, Basel, and Alfred Sallmann, Bottmingen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

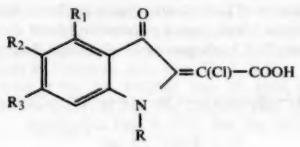
Filed Feb. 9, 1978, Ser. No. 876,376

Claims priority, application Luxembourg, Feb. 11, 1977, 76755

Int. Cl.³ C07B *209/18*

U.S. Cl. 260—326.13 C **14 Claims**

1. A compound of formula Ia



(Ia)

in which

R is lower alkyl having 1 to 4 carbon atoms; 2-hydroxy-lower alkyl, 3-hydroxy-lower alkyl or 2,3-dihydroxy-lower alkyl, said lower alkyl groups having 2 to 4 carbon atoms; or 2-lower alkoxy-lower alkyl or 3-lower alkoxy-lower alkyl, said alkoxy-alkyl groups having a total of 3 or 4 carbon atoms, and wherein R_1 is hydrogen, R_2 is methyl and R_3 is chloro, or R_2 is bromo and R_3 is methyl; or R_2 and R_3 are methyl; or wherein R_1 is methyl, R_2 is hydrogen, and R_3 is methyl; or wherein R_1 and R_2 are hydrogen and R_3 is methyl or ethyl; or wherein R_1 and R_3 are hydrogen, and R_2 is methyl, ethyl, isopropyl or n-butyl; or wherein R_1 is hydrogen, and R_2 and R_3 together are alkylene having 3 carbon atoms.

4,260,546

AGED MOLTEN COLOR OF MALEIC ANHYDRIDE

Hobe Schroeder, Warrenville, and Donald E. Thomka, Romeoville, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 26, 1979, Ser. No. 106,670
Int. Cl.³ C07D *307/60*
U.S. Cl. 260—346.76 **4 Claims**

1. A method of improving the aged molten color of maleic anhydride product obtained by the oxidation of butane vapor with air which comprises heating the impure maleic anhydride to a temperature in the range of from 60° C. up to 202° C. in the presence of from 0 up to 0.2 weight percent sulfuric acid and from 0 up to 0.1 weight percent hydrogen peroxide as an addition agent for up to 48 hours prior to fractionation of impure maleic anhydride to obtain the maleic acid product fraction.

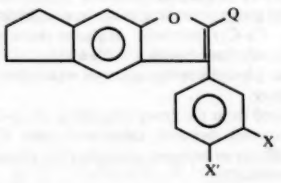
4,260,547

5H-INDENO[5,6-b]FURANS

Robert A. Scherrer, White Bear Lake, and Richard M. Stern, Cottage Grove, both of Minn., assignors to Riker Laboratories, Inc., Northridge, Calif.

Division of Ser. No. 17,590, Mar. 5, 1979, abandoned, which is a division of Ser. No. 943,690, Sep. 19, 1978, Pat. No. 4,154,848, which is a division of Ser. No. 861,893, Dec. 19, 1977, Pat. No. 4,128,659. This application Jan. 21, 1980, Ser. No. 113,640
Int. Cl.³ C07D *307/78*
U.S. Cl. 260—346.71 **2 Claims**

1. A compound of the formula



wherein

Q is hydrogen, bromine or iodine,

X and X' are individually hydrogen, fluorine, chlorine, bromine or carboxyl.

4,260,548

PROCESS FOR PREPARING POLYETHYLENE WAXES

Donald E. Hudgin, Princeton Junction, and Thomas Zawadzki, Princeton, both of N.J., assignors to Princeton Polymer Laboratories, N.J.

Filed Jun. 4, 1979, Ser. No. 45,331
Int. Cl.³ C07C *2/02, 57/04, 69/12, 69/60*
U.S. Cl. 260—346.74 **31 Claims**

1. A process of preparing an ethylene polymer wax consisting essentially of polymerizing a member of the group consisting of (1) ethylene and (2) a mixture of ethylene with a copolymerizable monomer, said copolymerizable monomer being present in an amount to provide not over 50 mol % of the polymer units, in an inert or chain transfer solvent in the presence of a free radical forming catalyst employing (A) incremental addition of the catalyst, (B) a temperature of 120° to 150° C. and (C) a pressure of 1500 to 3000 psi.

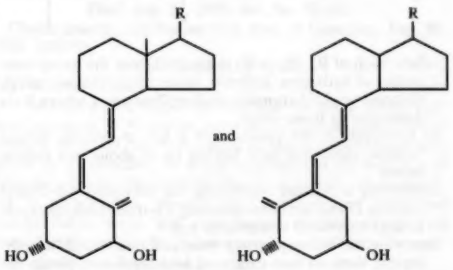
4,260,549

PROCESS FOR PREPARING 1α-HYDROXYLATED COMPOUNDS

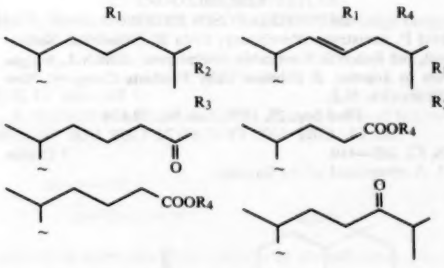
Hector F. DeLuca; Heinrich K. Schnoes, both of Madison; Herbert E. Paaren, Verona, and David E. Hamer, Madison, all of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed May 21, 1979, Ser. No. 41,079
Int. Cl.³ C07J *9/00*
U.S. Cl. 260—397.2 **12 Claims**

1. A method for preparing 1α-hydroxylated vitamin D compounds having the following general formulae



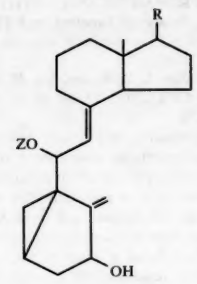
where R is selected from the group consisting of hydrogen, lower alkyl or from the following groups



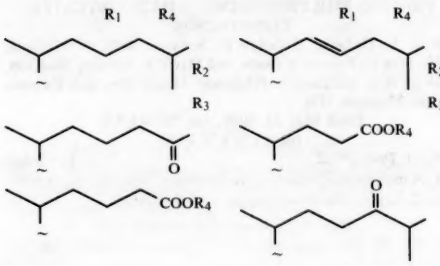
where each of R_1, R_2 or R_3 is selected from the group consisting of hydrogen, hydroxy, lower alkyl, O-lower alkyl, O-lower acyl, O-aromatic acyl or fluoro and where R_4 is hydrogen or lower alkyl

which comprises

subjecting a 1α-hydroxy-cyclovitamin D compounds having the general formula



where Z is hydrogen or lower alkyl
where R is selected from the group consisting of hydrogen, lower alkyl or from the following groups



where each of R_1, R_2 or R_3 is selected from the group consisting of hydrogen, hydroxy, lower alkyl, O-lower alkyl, O-lower acyl, O-aromatic acyl or fluoro and where R_4 is hydrogen or lower alkyl
to solvolysis in the presence of a low molecular weight organic carboxylic acid having up to about two carbon atoms
recovering a mixture containing the 1α-hydroxy-3-O-acyl vitamin D and the corresponding 5,6-trans-1α-hydroxy-3-O-acyl-vitamin D compounds and
removing the 3-O-acyl group from said compounds by subjecting them to base-catalyzed hydrolysis or hydride reduction.

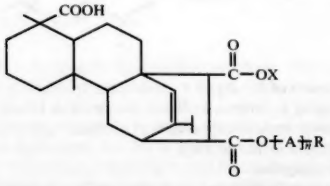
11. 5,6-trans-1α-hydroxyvitamin D_2.

4,260,550
MODIFIED ROSIN ESTERS

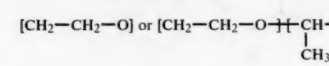
David P. Armstrong, Parsippany; Elvin R. Lukenbach, Somerset, and Robert J. Verdicchio, Succasunna, all of N.J., assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

Filed Sep. 25, 1979, Ser. No. 78,634
Int. Cl.[3] **C09F** *5/08;* **C07C** *69/74;* **C09F** *1/00*
U.S. Cl. 260—410 **7 Claims**

1. A compound of the formula

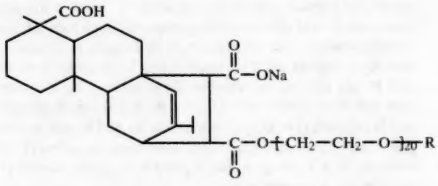


wherein R is alkyl containing from about 8 to 22 carbon atoms, hydroxyalkyl containing from about 8 to 22 carbon atoms, sorbitan monoesters of fatty acids containing from about 8 to 22 carbon atoms or alkyl phenoxy containing from about 8 to 22 carbon atoms; X is hydrogen or an alkali metal salt; A is



and n is an integer of at least 4.

4. A compound of claim **1** which compound is of the formula



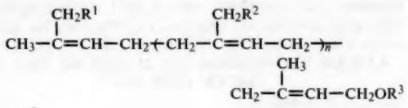
wherein R is sorbitan monococoate.

4,260,551
POLYPRENYL DERIVATIVES

Hiroshi Mishima; Akira Ogiso, and Shinsaku Kobayashi, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Continuation of Ser. No. 807,913, Jun. 20, 1977, abandoned, which is a division of Ser. No. 633,097, Nov. 18, 1975, Pat. No. 4,059,641. This application Feb. 12, 1979, Ser. No. 11,514
Int. Cl.[3] **C09F** *5/08;* **C07C** *69/76, 69/007*
U.S. Cl. 260—410.6 **32 Claims**

1. An ester having the formula



wherein
R^1 and R^2 may be the same or different and each is selected from the group consisting of hydrogen; hydroxyl; C_1–C_4 alkoxy; C_2–C_{12} aliphatic acyloxy; benzoyloxy; benzoyloxy substituted with C_1–C_3 alkyl, C_1–C_3 alkoxy or halogen; phenylacetoxy; phenylpropionyloxy; and cinnamoyloxy;
R^3 is selected from the group consisting of C_2–C_{12} aliphatic acyl; benzoyl; benzoyl substituted with C_1–C_3 alkyl, C_1–C_3 alkoxy or halogen; phenylacetyl; phenylpropionyl; and cinnamoyl;
n is an integer of from 1 to 4, and when n is 2 to 4, the R^2s may be the same or different; provided that at least one of R^1 and R^2 is OH, said alkoxy, said acyloxy, said benzoyloxy, phenylacetoxy, phenylpropionyloxy or cinnamoyloxy.

4,260,552

TETRASUBSTITUTED ORGANOTIN COMPOUNDS

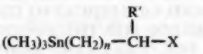
Richard J. Strunk, Cheshire; Winchester L. Hubbard, Woodbridge, and Robert E. Grahame, Jr., Cheshire, all of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Division of Ser. No. 640,983, Dec. 15, 1975, which is a continuation-in-part of Ser. No. 536,678, Dec. 26, 1974. This application Feb. 6, 1979, Ser. No. 9,730

Int. Cl.[3] C07E *7/22*

U.S. Cl. 260—429.7 14 Claims

1. A tetrasubstituted organotin compound having the general formula



wherein:

R′ is hydrogen, hydroxyl, methyl or ethoxy;

X is

(a) $-SO_2R_1$, R′ being hydrogen, and wherein R_1 is a straight chain or branched alkyl having 1 to 18 carbon atoms, cyclohexyl, benzyl, phenyl or phenyl substituted with one or more groups which may be the same or different and which may be alkoxy having 1 to 8 carbon atoms, phenoxy, alkylthio having 1 to 8 carbon atoms, halogen, nitro, acetyl, acetamido, carboxy, alkoxy-carbonyl, carbamoyl, cyano, hydroxy, trifluoromethyl, benzyl, naphthyl or norbornyl; naphthyl, biphenylyl, $-R_2Sn(CH_3)_3$ wherein R_2 is polymethylene having from 2 to 11 carbon atoms, $-R_4SO_2R_5Sn(CH_3)_3$ wherein R_4 is ethylene and R_5 is as defined for R_2 above;

(b) $-OR_7$, R′ being hydrogen, and wherein R_7 is a straight chain or branched alkyl having 8 to 16 carbon atoms, aryl, alkoxyaryl, alkaryl, haloaryl, N,N-dialkylminoalkyl, $-R_8Sn(CH_3)_3$ wherein R_8 is alkylene having 2 to 11 carbon atoms, cycloaliphatic having 4 to 6 carbon atoms;

(c) $-SR_{10}$, R′ being hydrogen, and wherein R_{10} is an alkyl having 1 to 16 carbon atoms, chlorophenyl, or $R_2Sn(CH_3)_3$;

(d) $-COR_{11}$, R′ being hydrogen, and wherein R_{11} is $-NHR_{12}$ wherein R_{12} is a straight chain or branched alkyl having 1 to 12 carbon atoms or aryl; $-NHCH_2OH$; $-NHNH_2$; $-NHCH_2NHCOR_2Sn(CH_3)_3$; $-OR_{13}$ wherein R_{13} is a straight chain or branched alkyl having 12 carbon atoms; $-(CH_2)_mOH$, wherein m is an integer from 2 to 4; $-(CH_2)_pN(R_{14})_2$ wherein p is an integer from 2 to 4 and R_{14} is a straight chain or branched alkyl having 1 to 5 carbon atoms; $-(CH_2)_qOCOR_2Sn(CH_3)_3$ wherein q is as defined for p above; $-(CH_2)_sN(CH_3)_3I$ wherein s is as defined for p above;

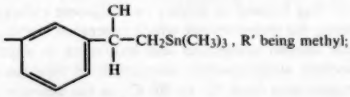
(e) $-NHCONH_2$, R′ being hydrogen;

(f) $-NHCSNH_2$, R′ being hydrogen;

(g) $-OCOR_{17}$, R′ being hydrogen, and wherein R_{17} is $-NHR_{18}$ wherein R_{18} is a straight chain or branched alkyl having 1 to 5 carbon atoms; and $-O(CH_2)_tSn(CH_3)_3$ wherein t is from 2 to 11;

(h) $-PO(OR_{20})_2$, R′ being hydrogen or ethoxy, and wherein R_{20} is a straight chain or branched alkyl having 1 to 5 carbon atoms;

(i) $-Si(OR_{21})_3$, R′ being hydrogen, and wherein R_{21} is a straight chain or branched alkyl having 1 to 5 carbon atoms;



(m)

and

n is an integer from 1 to 10.

4,260,553

ALUMINA-CONTAINING METHANATION CATALYSTS

John Happel, Hastings-on-Hudson, N.Y., and Miguel A. Hnatow, Verona, N.J., assignors to Gas Research Institute, Chicago, Ill.

Continuation-in-part of Ser. No. 851,556, Nov. 14, 1977, Pat. No. 4,151,191. This application Mar. 5, 1979, Ser. No. 17,318

The portion of the term of this patent subsequent to Apr. 24, 1996, has been disclaimed.

Int. Cl.[3] C07C *27/06, 1/04*

U.S. Cl. 260—449 M 5 Claims

1. A process for producing methane and other gaseous hydrocarbons by contacting a gaseous mixture containing hydrogen, carbon monoxide and gaseous compounds of sulfur in concentrations of up to 30,000 ppm with a three-component catalyst comprising (1) a mixture of oxygen and sulfur compounds of an element selected from the group consisting of the lanthanide elements, (2) a mixture of oxygen and sulfur compounds of molybdenum, and (3) an oxygen compound of aluminum or silicon, the atomic ratio of the lanthanide element to molybdenum being about 9 to 1, and the oxides of aluminum or silicon being present in an amount of about between 1% and about 10% by weight based on the weight of the catalyst.

4,260,554

STORAGE-STABLE, LIQUID CARBODIIMIDE MODIFIED POLYISOCYANATES AND PROCESS FOR THEIR MANUFACTURE

Rainer Ohlinger, Heidelberg; Georg Falkenstein, Neustadt; Rolf Wurmb, Heidelberg, and Matthias Marx, Bad Duerkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 27, 1979, Ser. No. 70,282

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1978, 2837770

Int. Cl.[3] C07C *119/042*

U.S. Cl. 260—453 SP 7 Claims

1. Storage-stable, liquid carbodiimide-modified polyisocyanate having an NCO content from about 20 to about 45 weight percent, based on the total weight of said polyisocyanate prepared by condensation of a polyisocyanate in the presence of catalytic amounts of a catalyst selected from the group consisting of phospholine, phospholidine, phospholine oxide and phospholidine oxide, said condensation terminated and said carbodiimide-modified polyisocyanate stabilized by trifluoromethanesulfonic acid.

4,260,555

PROCESS FOR THE MANUFACTURE OF CYANOOXIMINONITRILES

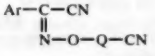
Hal L. Myatt, Greensboro, N.C., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 7, 1979, Ser. No. 92,256

Int. Cl.[3] C07C *120/00*

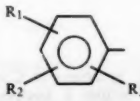
U.S. Cl. 260—465 E 12 Claims

1. A process for the manufacture of compounds of the formula (I)

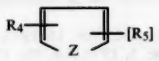


wherein Q represents lower alkylene or phenalkylene;

Ar represents a phenyl group of the formula:



an α- or β-naphthyl group; or
a heterocyclic group of the formula:



R_1 represents hydrogen, halogen, lower alkyl, lower alkoxy, or a phenoxy group which is in the para position and which is optionally substituted a maximum of twice by halogen, CN, NO_2, or CF_3;
R_2 and R_3 independently represent hydrogen, halogen, lower alkyl, NO_2, lower alkoxy, lower halogenoalkyl;
R_4 represents hydrogen, halogen, lower alkyl, lower akloxy, and NO_2;
Z represents oxygen or sulfur;
which comprises condensing a cyano sulfonate of the formula

Ph-SO_3-Q-CN

wherein PH-SO_3-is an aromatic protecting group with Ph being phenyl or p-methyl substituted phenyl with an oximinoaryl nitrile having the formula:

or the alkali metal salt thereof, at a temperature of about 25°–140° C., prepared by reacting an aryl sulfonyl halide of the formula

Ph-SO_2-X

wherein X is halogen with a carbonyl compound of the formula

O=Q

and an alkali metal cyanide in the presence of a phase-transfer catalyst at a temperature of about 0°–°20° C. and said oximinoaryl nitrile having been prepared by the nitrosation of an aryl acetonitrile of the formula

Ar-CH_2-CN

with a lower alkyl nitrite ester in the presence of an alkali metal hydroxide at an initial temperature of 10°–50° C., and at a subsequent temperature of about 100°–110° C.

4,260,556

PROCESS FOR PREPARING NITROGEN-CONTAINING COMPOUNDS FROM 2-PENTENENITRILE

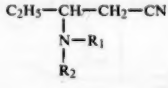
Edward W. Kluger; Tien-Kuei Su, both of Spartanburg, S.C., and Teresa J. Thompson, Hyattsville, Md., assignors to Milliken Research Corporation, Spartanburg, S.C.

Continuation-in-part of Ser. No. 967,391, Dec. 7, 1978, Pat. No. 4,211,725, which is a division of Ser. No. 850,456, Nov. 10, 1977, abandoned. This application Jun. 26, 1979, Ser. No. 52,293

Int. Cl.[3] **C07C** *121/00, 121/20, 121/30, 121/43*

U.S. Cl. 260—465.5 R **4 Claims**

1. A process for preparing non-aromatic, nitrogen-containing compounds represented structurally as:



wherein R_1 and R_2 are selected from hydrogen or C_2H_5—CH—CH_2—CN, which comprises reacting a nucleophilic agent selected from aqueous ammonia, ammonium hydroxide and anhydrous ammonia with 2-pentenenitrile in the presence of a metal addition catalyst selected from Raney Nickel, ruthenium, cobalt, iron, palladium, platinum, osmium, iridium, copper, and rhodium in a molar ratio of from about 1:1 to 1:20 at a temperature of from about 50° C. to about 180° C. for a period of time effective to allow said reaction to go to substantial completion whereby said 2-pentenenitrile undergoes an addition reaction with said nucleophilic agent to form said nitrogencontaining compounds.

4,260,557

POLYMER CONTAINING AMINO GROUPS AND HYDROXYL AND/OR MERCAPTO GROUPS AND THE USE THEREOF FOR THE PRODUCTION OF POLYURETHANE RESINS

Jan Mazánek, and Johannes Blahak, both of Cologne, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 793,233, May 2, 1977, Pat. No. 4,169,206. This application Apr. 26, 1979, Ser. No. 33,343

Claims priority, application Fed. Rep. of Germany, May 5, 1976, 2619840

The portion of the term of this patent subsequent to Jan. 23, 1996, has been disclaimed.

Int. Cl.[3] **C07C** *153/023, 101/54*

U.S. Cl. 260—455 R **1 Claim**

1. A process for the production of amine compounds having an amine group to carboxyl group ratio in excess of 8:1, comprising reacting a material having a molecular weight of 1300 to 60,000 selected from the group consisting of polyether polyols, polythioether polythiols, polyols containing both polyether and polythioether segments and polythiols containing both polyether and polythioether segments, with from 5 to 70% of the equivalent quantity of isatoic acid anhydride at temperature of from 0° to 200° C.

4,260,558

PROCESS FOR THE PREPARATION OF AROMATIC AMINOHYDROXY COMPOUNDS

Theodor Pfister, Wuppertal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

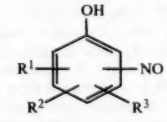
Filed Oct. 23, 1978, Ser. No. 953,805

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1977, 2751136

Int. Cl.[3] **C07C** *99/00, 139/00, 143/56, 143/64*

U.S. Cl. 260—507 R **8 Claims**

1. In a process for the preparation of an aminohydroxy compound by contacting an aromatic nitroso compound of the formula



(I)

wherein
R^1, R^2 and R^3 independently represent hydrogen, a lower alkyl radical, halogen, a carboxyl or sulfo group or the corresponding alkali metal salt thereof or
R^1, R^2 or R^3 individually represent an optionally substituted aromatic ring formed by linking two adjacent radicals,
with hydrazine, the improvement which comprises employing said aromatic nitroso compound and hydrazine in approximately equivalent stoichiometric amounts in an aqueous medium at temperatures from 10° to 50° C., in the absence of a catalyst, the aromatic nitroso compound being initially introduced into a reaction chamber and the hydrazine being added thereto.

4,260,559

PREPARATION OF AMIDOSULFONIC ACIDS

Peter Jacobs, Frankenthal; Dietrich Mangold, Neckargemuend, and Gerhard Hamprecht, Weinheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

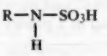
Filed Nov. 26, 1979, Ser. No. 97,211

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1978, 2852159

Int. Cl.³ C07C *143/86*

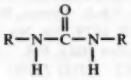
U.S. Cl. 260—513.6 **7 Claims**

1. A process for the preparation of an amidosulfonic acid of the formula



I

where R is an aliphatic or cycloaliphatic radical, by reacting a urea with oleum in the presence of an organic solvent, wherein a substituted urea of the formula



II

where R has the above meaning, is reacted with oleum, which contains from 1 to 2.5 moles of sulfur trioxide and from 1 to 1.5 moles of sulfuric acid per mole of starting material II, in a first step at from −20° to +50° C., and then in a second step at from 50° C. to 140° C.

4,260,560

PREPARATION OF SULFAMYL HALIDES

Peter Jacobs, Frankenthal; Gerhard Hamprecht, Weinheim, and Dietrich Mangold, Neckargemuend, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

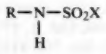
Filed Nov. 26, 1979, Ser. No. 97,310

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1978, 2852274

Int. Cl.³ C07C *143/70*

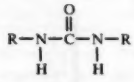
U.S. Cl. 260—543 R **15 Claims**

1. A process for the preparation of a sulfamyl halide of the formula



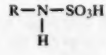
I

where R is an aliphatic or cycloaliphatic radical and X is halogen, which comprises: reacting a substituted urea of the formula



IV

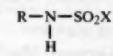
where R has the above meaning, with oleum, which contains from 1 to 2.5 moles of sulfur trioxide and from 1 to 1.5 moles of sulfuric acid per mole of starting material II, in a first step at from −20° to +50° C. and then in a second step at from 50° C. to 140° C., after which the resulting sulfamic acid of the formula



II

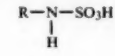
where R has the above meaning, or a metal salt thereof, is reacted, in a third step, with a halogen as the halogenating agent, in the presence of phosphorus or a phosphorus trihalide.

2. A process for the preparation of a sulfamyl halide of the formula



I

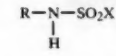
where R is an aliphatic or cycloaliphatic radical and X is halogen, which comprises: reacting a sulfamic acid of the formula



II

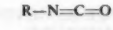
where R has the above meaning, or a metal salt thereof, with a halogen as the halogenating agent, in the presence of phosphorus or a phosphorus trihalide.

3. A process for the preparation of a sulfamyl halide of the formula



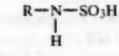
I

where R is an aliphatic or cycloaliphatic radical and X is halogen, which comprises: reacting in a first stage, an isocyanate of the formula



III

where R has the above meaning, with sulfuric acid to give a sulfamic acid of the formula



II

where R has the above meaning, and thereafter, in a second stage, compound II or a metal salt thereof is reacted with a halogen as the halogenating agent, in the presence of phosphorus or a phosphorus trihalide.

4,260,561

PROCESS FOR THE PREPARATION OF CARBONYL DIFLUORIDES

Raimund Franz, Kelkheim, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

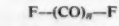
Filed May 30, 1979, Ser. No. 43,736

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1978, 2823981

Int. Cl.³ C07C *51/04, 51/58*

U.S. Cl. 260—544 F **9 Claims**

1. A process for the preparation of a carbonyl difluoride of the formula



in which n is 1 or 2, which comprises fluorinating the corresponding carbonyl dichloride with hydrogen fluoride in the presence of acetonitrile.

4,260,562
PREPARATION OF O,N-DISUBSTITUTED HYDROXYLAMINES

Friedrich Linhart, Heidelberg; Bjoern Girgensohn, Mannheim; Gernot Reissenweber, and Eckhard Hickmann, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

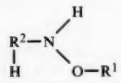
Filed Feb. 27, 1980, Ser. No. 124,964

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1979, 2911246

Int. Cl.[3] **C07C** *85/00, 85/20, 85/24*

U.S. Cl. 564—300 **9 Claims**

1. A process for the preparation of an O,N-disubstituted hydroxylamine of the formula



I

where R^1 is an aliphatic radical and R^2 is a cycloaliphatic radical which may or may not be substituted by aliphatic radicals, by reacting a ketoxime with hydrogen under pressure in the presence of a platinum catalyst and of a mineral acid, wherein an O-substituted ketoxime of the formula

$$R^2=N-OR^1 \qquad II$$

where R^1 and R^2 have the above meanings, is reacted with excess hydrogen under a pressure of from 35 to 500 bar.

4,260,563
APPARATUS INCLUDING A VENTURI FOR REMOVING IMPURITIES FROM A GASEOUS MIXTURE

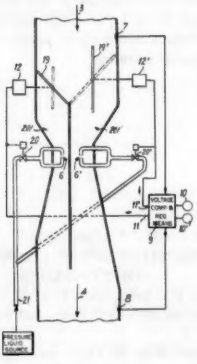
Paul Brulhet, Nilvange, France, assignor to Societe Sacilor, Acieries et Laminoirs de Lorraine, Hayange, France

Continuation of Ser. No. 819,115, Jul. 26, 1977, abandoned. This application Jan. 12, 1979, Ser. No. 3,033

Claims priority, application France, Jul. 28, 1976, 76 22924

Int. Cl.[3] **B01D** *47/10;* **B05B** *1/26*

U.S. Cl. 261—23 R **2 Claims**



1. Purifying apparatus for removing small particles of impurities from a gaseous mixture flowing in a conduit, comprising

(a) venturi means connected in series in the conduit, said venturi means having a throat portion;

(b) liquid injection means for introducing liquid into said venturi means to form a liquid mist pattern extending transversely across said venturi means, said liquid injection means including a plurality of injection heads (**30, 30', 30''**) mounted in longitudinally spaced relation relative to the throat portion of said venturi means, each of said injections heads including a pair of opposed spaced adjacent nozzles arranged longitudinally of said venturi means;

(c) means for generating an electrical output signal that is a function of the gas pressure differential across said venturi means, including

(1) a pair of electrodes mounted in the conduit on opposite sides of said venturi means,

(2) a reference voltage source, and

(3) voltage comparison and regulating means connected with said electrodes and with said reference voltage source for producing a resultant signal that is compared with said reference voltage to produce an output signal for operating said venturi adjusting means, and

(d) means responsive to said electrical output signal for operating selected ones of said injection heads to maintain the pressure differential at a predetermined value.

4,260,564
PROCESS FOR THE MANUFACTURE OF SPECTACLE LENSES MADE OF DIGLYCOL ALLYL CARBONATE OR THE LIKE

Paolo Baiocchi, and Gian G. Giani, both of Parma, Italy, assignors to Intercast Europe S.p.A., Parma, Italy

Filed Aug. 15, 1979, Ser. No. 67,060

Claims priority, application Italy, Feb. 14, 1979, 40021 A/79

Int. Cl.[3] **B29D** *11/00*

U.S. Cl. 264—2.2 **10 Claims**

1. In a process for manufacturing plastic spectacle lenses by the polymerization in a mold of diglycol allyl carbonate or the like plastic monomer admixed with a polymerization initiator therefor, in combination, the improvement comprising the steps of:

(1) carrying out said polymerization with heating in a mold having planar surfaces until a degree of polymerization in the range of about 65–85% of completion has been achieved; and

(2) removing the partially polymerized material from said mold, subjecting the same to deflection to a curvature corresponding to the desired lens and heating the thus-deflected material to complete the polymerization thereof.

4,260,565
PROCESS FOR THE PRODUCTION OF FIBROUS STRUCTURES

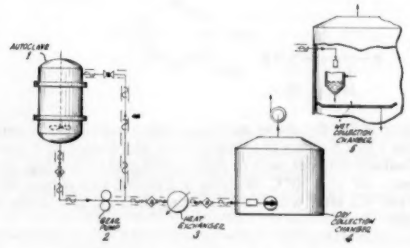
Fabrizio D'Amico, San Donato Milanese; Giancarlo Serboki, Saronno, and Vincenzo Foti, Milan, all of Italy, assignors to Anic S.p.A., Palermo, Italy

Continuation of Ser. No. 686,528, May 14, 1976, abandoned, which is a continuation of Ser. No. 511,080, Oct. 1, 1974, abandoned. This application Jun. 12, 1978, Ser. No. 914,761

Claims priority, application Italy, Oct. 2, 1973, 29620 A/73

Int. Cl.[3] **B29C** *6/00*

U.S. Cl. 264—13 **6 Claims**



1. A process for the production of fibrids composed of two incompatible polymer compounds which comprises the steps of:

(a) dissolving a first fibrid-forming polymer compound se-

lected from the group consisting of, polyethylene, polypropylene, polyvinylacetate, polystyrene, polyvinylalchohol and copolymers thereof in an organic solvent selected from n-heptane and toluene to thereby form a substantially homogeneous liquid phase;

(b) dissolving a second fibrid-forming polymer compound which is incompatible with said first fibrid-forming polymer compound in an organic solvent selected from n-heptane and toluene to thereby form a substantially homogeneous liquid phase;

(c) mixing said liquid phases in an amount such that said second fibrid-forming polymer compound is present in said mixture in an amount equal to 10–20% by weight of said first fibrid-forming polymer compound; and

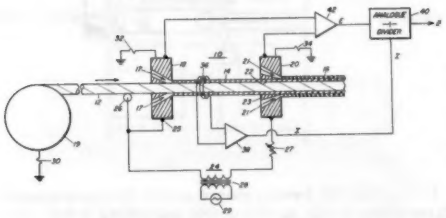
(d) flash-spinning said mixture at a temperature above the melting point of said fibrid-forming compounds and at a pressure effective to form fibrids.

4,260,566

STRAND SHIELD DEFECT DETECTOR

Nicholaas L. Brouwer, Washington Township, Armstrong County, and Louis H. Dreinhoefer, Murrysville, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Oct. 24, 1979, Ser. No. 87,709
Int. Cl.³ B29F *3/10*
U.S. Cl. 264—22 **2 Claims**



1. A method of detecting imperfections in a semi-conducting strand shield as it is being applied to an electrical conductor, the method comprising the steps of:

applying an AC electrical potential between a bare location of the conductor and apparatus applying a jacket of insulating material over the strand shield after the shield has been applied to the conductor, as the conductor and shield move through the apparatus, the bare conductor and apparatus providing low impedance paths for current flow parallel to a path for current flow provided by the strand shield and the conductor with the strand shield,

measuring the electrical potential applied to the bare conductor and apparatus applying the jacket of insulating material, and current flow, if any, through the strand shield and conductor with the strand shield due to a defect in the shield in a manner that permits continuing travel of the shield and conductor,

calculating the resultant impedance to the flow of current in the strand shield and conductor with the shield, and

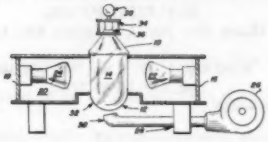
sensing changes in the resultant impedance, such changes being caused by a defect in the strand shield applied to the conductor.

4,260,567

SHRINKAGE REDUCTION OF BLOW MOLDED ORIENTED PET BOTTLE

Wassily Poppe, Lombard; Charles F. Craddock, Glendale Heights, both of Ill.; Robert W. Gutekunst, Dunwoody, Ga.; Robert G. Ladd, Lisle, and Sue A. Mager, Warrenville, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Feb. 26, 1979, Ser. No. 15,308
Int. Cl.³ B29C *25/00*
U.S. Cl. 264—25 **9 Claims**



1. A process for heat setting a biaxially oriented thermoplastic resin container, said container having a shoulder portion, a main wall portion, and a base portion comprising pressuring said container by introducing a gas inert to said resin to a pressure sufficient to prevent container collapse during subsequent heat treatment, exposing said main wall portion to infrared radiation while shielding said shoulder and base portions from said radiation for a time sufficient for said main wall portion surface to reach a temperature of 1° to 10° F. below the glass transition temperature of the resin, maintaining sufficient gas flow to said shoulder and base portions so that the temperature of said portions does not rise above 60° F. below the glass transition temperature of the resin during said exposing step, thereafter cooling said container until said wall portion attains a temperature of at least 25° F. below said glass transition temperature of said resin while maintaining said pressure, and releasing said pressure.

4,260,568

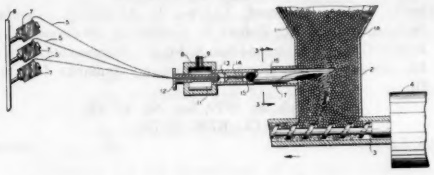
METHOD FOR FEEDING WASTE YARN TO AN EXTRUDER

Fred M. Warzel, Bartlesville, Okla., assignor to Phillips Petroleum Co., Bartlesville, Okla.

Division of Ser. No. 870,156, Jan. 17, 1978, Pat. No. 4,175,870.
This application Jun. 13, 1979, Ser. No. 48,104
Int. Cl.³ B29H *19/00*
U.S. Cl. 264—37 **3 Claims**

1. A method for feeding yarn into a mass of moving particles which comprises condensing said yarn to form a wad and conducting said wad in protected manner into the body of a mass of moving particles being fed to an extruder or molding

machine, the wad of yarn being protected from contact with said mass of moving particles until it has been fed into the body



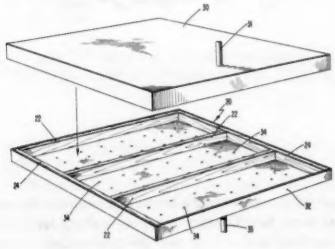
of said mass and the wad being then released from said protection into the body of said mass.

4,260,569

METHOD OF MAKING A FOAMED POLYSTYRENE BUILDING PANEL

Aubrey J. Hurst, Rte. No. 3, Mercury Dr., Concord, Tenn. 37720

Filed Sep. 1, 1978, Ser. No. 939,044
Int. Cl.³ B29D *27/00*
U.S. Cl. 264—45.4 **8 Claims**



1. A process for producing a building panel having insulation material bonded to frame members, said process comprising the steps of:

(a) applying a liquid film of polystyrene in solution on at least one side of a plurality of frame members which are substantially straight,

(b) drying said liquid polystyrene film to form a dried coating of said polystyrene on said one side of each frame member,

(c) placing said coated frame members along the same plane in a mold cavity with said dried coating side being faced inwardly toward said cavity,

(d) placing expandable styrene beads in said mold cavity, and

(e) heating said mold cavity at a temperature and for a time sufficient to expand said styrene beads and fill the cavity and cause the polystyrene coating on the frame member to integrally form a bond with the styrene beads expanding contiguously to said frame member.

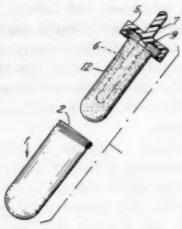
4,260,570

METHOD AND APPARATUS FOR MAKING A VAGINAL CLEANING DEVICE

Kanak K. R. Ravel, Perth Amboy, N.J., assignor to Block Drug Company Inc., Jersey City, N.J.

Filed May 11, 1979, Ser. No. 38,139
Int. Cl.³ B29C *23/00*
U.S. Cl. 264—46.6 **3 Claims**

1. A method of forming a vaginal cleansing device which comprises (1) introducing foamable reactants into a container inert thereto and having a closure opening adapted to be closed by a closure member; (2) closing said closure opening with a closure member having an elongated extension extending into said container and also having means to vent gas from said container; (3) forming a cured foam from said reactants in said container surrounding at least a portion of said extension ex-



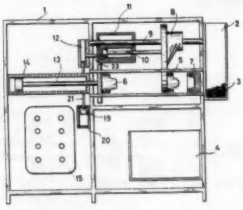
tending into said container; and (4) separating said closure member and extension having one end surrounded by a cured foam from said container.

4,260,571

METHOD FOR MOLDING EXPANDED PLASTIC MATERIAL ARTICLES

Albert E. Ritter, Durlinsdorf, France, assignor to Selene Trust, Vaduz, Liechtenstein

Continuation-in-part of Ser. No. 671,949, Mar. 30, 1976, abandoned. This application Apr. 11, 1978, Ser. No. 895,452
Claims priority, application France, May 21, 1975, 75 15841; Jan. 16, 1976, 76 01160
Int. Cl.³ B29D *27/00;* **B29F** *5/02*
U.S. Cl. 264—53 **12 Claims**



1. A method for forming shaped articles from preexpanded thermoplastic beads, in two cycles, comprising a first cycle which includes the stages of

introducing said beads into a first mold cavity of a first mold to fill said mold cavity,

wherein said first mold cavity is defined by only a male member and a female member, and

wherein said first mold is maintained at a substantially constant elevated temperature throughout said two cycles;

injecting steam into said first mold to cause the beads to expand, partially melt, agglomerate and to form a shaped cellular preform;

disengaging said two members of the first mold; and a second cycle which includes the stages of

transferring said shaped cellular preform, at substantially ambient pressure, from both members of the first mold to a second mold,

the shaped preform being free to expand under the conditions of said transferring,

wherein said second mold is at a second substantially constant temperature throughout said two cycles,

wherein said second substantially constant temperature is lower than said substantially constant elevated temperature, and

wherein the cavity of said second mold has the shape of the ultimate shaped article;

cooling and compressing said shaped cellular preform in said second mold; and

removing the finished article from said second mold.

4,260,572

PROCESS FOR PRODUCING FOAMED POLYSTYRENE BOARDS

Hiroyuki Akiyama, Hiratsuka; Nobuyoshi Shimoyashiki, Isehara; Hideo Hatakeyama, Hiratsuka, and Toru Yamamoto, Kanuma, all of Japan, assignors to Japan Styrene Paper Corporation, Tokyo, Japan

Filed May 17, 1979, Ser. No. 40,086

Claims priority, application Japan, Mar. 9, 1979, 54/26730

Int. Cl.³ B29D *27/00*

U.S. Cl. 264—53 **8 Claims**

1. In a process for producing a foamed polystyrene board which comprises melting the polystyrene under heat in an extruder, mixing the molten mass with a blowing agent, and extruding the resulting foamable molten gel from the extruder into a lower pressure zone; the improvement wherein

(1) the polystyrene has a melt index, measured by the method set forth in ASTM D-1238G, of from 0.5 to 5,

(2) the blowing agent is a mixture of 65 to 85 mole% of methyl chloride and 35 to 15 mole% of dichlorodifluoromethane, and

(3) within the extruder, the polystyrene is mixed with a flowability improver for the polystyrene in an amount of from 1 to 5 parts by weight of the flowability improver per 100 parts by weight of the polystyrene, said flowability improver having a melting point of more than 70° C.

4,260,573

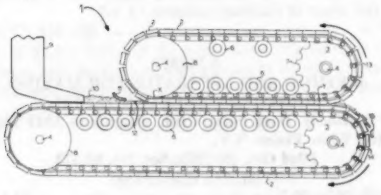
METHOD FOR PELLETIZING WOOD PARTICULATE MATTER

Kenneth Overman, Rte. 2, Box 407, Liberty, N.C. 27298

Filed Feb. 7, 1980, Ser. No. 119,522

Int. Cl.³ B29C *19/02*

U.S. Cl. 264—68 **9 Claims**



1. A method of forming pellets from wood particulate matter comprising:

(a) providing a supply of particulate wood matter having a water content between 12 and 20 percent;

(b) providing an extrusion means adapted to continuously extrude such wood particulate matter through one or more elongated dies composed of first and second continuous mating belts comprised of a plurality of pads having a free surface, each of the pads of at least one of said belts containing one or more longitudinal grooves in its free surface and the free surface of the pads of the other continuous belt being confrontingly aligned with the free surface of the pads containing the groove or grooves, to form one or more elongated dies;

(c) feeding the wood particulate matter into such die or dies and thereafter;

(d) compacting, extruding and autogenously heating the wood particles in the one or more elongated die or dies by simultaneously rotating the first belt counterclockwise and the second belt clockwise at respective rotational speeds such that the linear speed of said first is greater than the linear speed of the second belt, thereby creating heat from friction generated between said wood particles and said dies; and,

(e) breaking the compacted wood particles formed by step (d) into pellets.

4,260,574

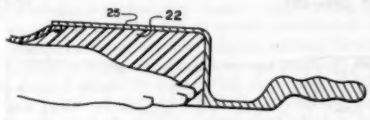
METHOD OF MAKING AN ORNAMENTAL REPLICA OF A HAND

James B. Macomson, 212 B W. 2nd Ave., Gastonia, N.C. 28052

Filed Apr. 9, 1979, Ser. No. 28,236

Int. Cl.³ B22D *25/02*

U.S. Cl. 264—129 **11 Claims**



1. A method of making an ornamental replica of a hand comprising:

placing the hand to be reproduced onto a relatively flat surface;

applying a fluid, elastic impression-forming material over the hand;

allowing the impression-forming material to dry and create a mold-like elastic form over the hand thereby creating a negative impression of the hand therein;

applying a temporarily pliable, solidifying thermoplastic support material over the top surface of the impression-forming material prior to or upon drying thereof and allowing said support material to harden so as to form a rigid backing to maintain the form of the impression-material and the negative impression contained therein;

removing the hand from the impression-forming material and filling the negative impression with a pourable solidifying material to form a positive impression of the hand;

withdrawing the positive impression from the impression-forming material and coating the positive impression with an electricity-conducting film; and

electrolytically depositing an ornamental layer of gold, silver, brass or the like on the positive impression of the hand to provide a decorative replica.

4,260,575

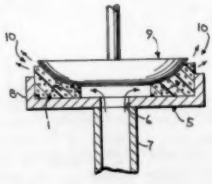
METHOD FOR MOLDING EAR CUSHIONS

Donald G. Thew, New Berlin, and Lane Gehrig, Milwaukee, both of Wis., assignors to Koss Corporation, Milwaukee, Wis.

Filed Nov. 5, 1979, Ser. No. 91,339

Int. Cl.³ B29D *27/00*

U.S. Cl. 264—154 **7 Claims**



1. A method of forming an ear cushion from porous foam material, the steps comprising:

cutting an ear cushion blank from a flexible porous thermal formable foam material;

compressing the ear cushion blank with a forming tool to a selected shape; and

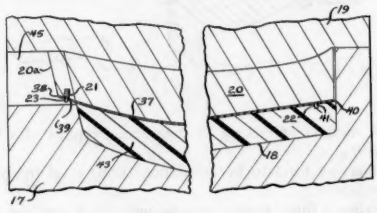
forcing a gas which is heated to within the thermal forming temperature range through the porous foam material such that the ear cushion retains a desired shape when the forming tool is removed.

4,260,576

THERMAL EXPANSION COMPENSATION APPARATUS AND METHOD FOR MAKING COMPOSITE SKIS

Jerry Pollard, Woodinville, Wash., assignor to The Coleman Company, Inc., Wichita, Kans.

Filed Jun. 5, 1980, Ser. No. 156,555
Int. Cl.³ B29C *1/00, 27/22, 27/30*
U.S. Cl. 264—257 **10 Claims**



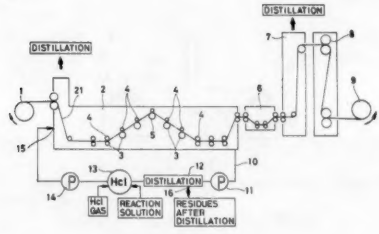
1. In a ski mold for molding composite skis having a metal top and a molded body, the ski mold including an open-cavity bottom mold part for molding the body of the ski and a top mold part, the top and bottom parts being supported for relative movement so that the parts can move together to close the cavity in the bottom part, the improvement comprising expansion compensation means on the top mold part for holding a metal top on the top mold part, the expansion compensation means including first means for holding the metal top at one end thereof and second means for holding the metal top at the other end thereof, the second holding means being movable in a direction parallel to a line extending between the two holding means whereby the metal top can expand relative to the top mold part as the metal top is heated.

4,260,577

PROCESS FOR PRODUCING RUBBER HYDROCHLORIDE SHEET

Yoshio Yasuoka, Tokai, Japan, assignor to Takayoshi Narisue, Tokyo, Japan

Filed Nov. 5, 1979, Ser. No. 91,122
Claims priority, application Japan, Jul. 17, 1979, 54-89977
Int. Cl.³ B29D *7/20;* **B29C** *17/00;* **C08C** *19/16*
U.S. Cl. 264—280 **10 Claims**



1. In a process for the production of rubber hydrochloride in sheet form in which a sheet of rubber is treated with a solution of hydrogen chloride with consequent intitial swelling elongation and tackiness followed by an increase in tensile strength and stiffness of the sheet, washing to remove excess entrained hydrogen chloride, and drying of the rubber hydrochloride sheet, the improvement which comprises:

continuously advancing the rubber sheet through a reaction zone containing a solution of hydrogen chloride in an organic solvent capable of swelling the rubber,

maintaining said sheet fully immersed in said solution by preventing flotation of said sheet therein,

compensating for the initial elongation of said sheet as it advances through the reaction zone to prevent any part of said sheet from contacting any other part thereof, thus preventing damage to said sheet while in a tacky state,

washing the hydrochlorinated sheet with an organic solvent to remove substantially all of the entrained hydrogen chloride and any other contaminants,

drying the washed sheet at an elevated temperature, and

calendering said sheet at an elevated temperature to obtain rubber hydrochloride sheet of uniform thickness.

8. A process according to claim **1** comprising continuously advancing a rubber sheet through a reaction zone containing a saturated solution of hydrogen chloride in ethyl acetate,

preventing flotation of said sheet in said solution so that it is fully immersed therein as it travels through the reaction zone,

taking up the slack in said sheet caused by the initial swelling thereof on hydrochlorination so as to maintain said sheet in substantially fully elongated condition to prevent contact of said sheet with itself while in tacky condition,

continuing to advance said sheet through said solution in the reaction zone until the hydrochlorination reaction is substantially complete as evidenced by stiffening of the sheet and loss of tackiness thereof,

advancing said sheet through a washing zone in contact with ethyl acetate whereby substantially all entrained unreacted hydrogen chloride and other contaminants are removed,

passing said washed sheet through a drying zone in contact with circulating air at a temperature in the range from about 60° C. to about 80° C., and

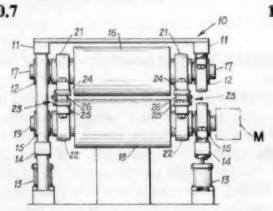
calendering the resulting dried sheet still containing heat from the drying operation to produce rubber hydrochloride sheet of uniform thickness.

4,260,578

METHOD AND APPARATUS FOR MAKING ELASTOMER SHEET MATERIAL

Dale R. Moody, Dana Point, Calif., assignor to AMF Incorporated, White Plains, N.Y.

Filed Oct. 18, 1979, Ser. No. 86,373
Int. Cl.³ B29C *15/00*
U.S. Cl. 264—40.7 **14 Claims**



1. A method of making elastomer sheet comprising the steps of

providing an extruder and extruding elastomer material in tubular form;

longitudinally slitting the tubular elastomer material as it discharges from the extruder;

opening the slit tubular elastomer material to a planar form;

providing calendering means having a pair of spaced rollers with bearing means and means providing a constant force for holding one of the rollers in position relative to the other;

providing nip adjusting means between the bearing means to delimit the nip between the rollers and to load the bearing means by the constant force;

introducing the planar elastomer material to the nip between the pair of rollers; and

calendering the planar elastomer material with said pair of rollers thereby reducing said material to a desired thickness.

11. Calender apparatus for elastomer material, comprising

a frame having vertically movable means;

a first roller with shaft means extending from the ends of said roller rotatable mounted on said frame;

another roller with shaft means extending from the end of said roller rotatable mounted on said vertically movable means;

fluid motor means for moving said vertically movable means thereby moving said other roller toward and away from said first roller;

bearing means mounted on both ends of the shafts of both rollers;

load means connected to the bearing means on both ends of one of said shafts and being clamped between the bearing means on opposite shafts thereby limiting the movement of said other roller toward said first roller and delimiting the nip between said rollers;

variable speed motor means connected to rotatable drive one of said rollers; and

said fluid motor means providing a constant force for loading both of said rollers when said load means are clamped between said bearing means.

4,260,579

DEVICE AND METHOD FOR SIMULATING BILIRUBIN IN URINE

Nancy K. Barton; Carmine M. Greene, and Myron C. Rapkin, all of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed May 10, 1979, Ser. No. 37,647
Int. Cl.³ G01N *33/52, 33/62*
U.S. Cl. 422—56 **23 Claims**

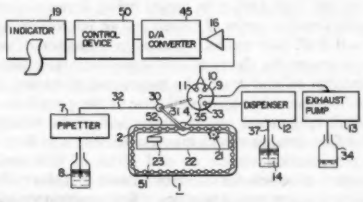
1. A device useful in the preparation of a bilirubin control solution, said device comprising a carrier vehicle incorporated with a predetermined quantity of unconjugated bilirubin and a mixture of red, blue and yellow dyes.

4,260,580

CLINICAL ANALYZER

Isao Sindo; Yoshio Matsuoka, both of Katsuta, and Kasumi Yoshida, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 14, 1978, Ser. No. 942,142
Claims priority, application Japan, Sep. 14, 1977, 52-111050
Int. Cl.³ G01N *1/14*
U.S. Cl. 422—64 **8 Claims**



1. A clinical analyzer comprising

(a) transport means for transporting a plurality of sample containers sequentially, each container containing a body fluid sample therein;

(b) means for moving said transport means along a path in a direction to cause each sample container to pass a sampling position;

(c) a sample receiving container arranged at a sample discharging position;

(d) a pick-up means for taking out a predetermined amount of sample from the sample container moved to said sampling position and for discharging the taken-out sample into said sample receiving container;

(e) a detector means for obtaining a measurement value according to an analyzing item of said sample retained in said sample receiving container;

(f) means for indicating data on the basis of said measurement value;

(g) a container exchanging means arranged along the moving path of said plurality of sample containers for permitting the exchange of a new sample container for one of the containers being transported by said transport means;

(h) control means for controlling the operation of each of said means of said clinical analyzer whereby, in normal operation, the body fluid samples in said sample containers are sequentially moved to the sampling position, sampled and measured for the analyzing item; said control means, in emergency operation, upon receipt of an interruption measurement command controlling the analyzer to measure only the sample in the sample container positioned in the container exchanging means and also stopping further movement of said plurality of sample containers and causing said pick-up means and said detector means to transfer a sample from a new sample container that has been manually exchanged for the sample container that has previously been sampled whereby the new sample is sampled and measured for an analyzing item and thereafter said control means in accordance with an interruption cancelling command returning the analyzer to normal operation; and

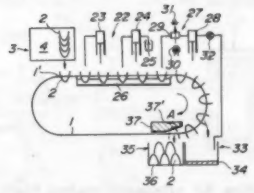
(i) switching means for transmitting said interruption measurement command and said interruption cancelling command to said control means.

4,260,581

AUTOMATIC ANALYSIS APPARATUS

Masahiko Sakurada, Machida, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 1, 1980, Ser. No. 117,654
Claims priority, application Japan, Feb. 7, 1979, 54/12324; Feb. 7, 1979, 54/12325
Int. Cl.³ G01N *1/10, 35/04*
U.S. Cl. 422—65 **2 Claims**



1. In an automatic analysis apparatus comprising a movable reaction line provided along its overall length with an engage portion operative to be engaged with a disposable reaction vessel, a supply station arranged at an inlet side of said reaction line and causing the reaction vessels to be engaged with each engage portion of said reaction line one by one, a measuring station arranged at a position succeeding to the inlet side of said reaction line and reacting a given amount of sample and reagent poured into the reaction vessel with each other to produce a reaction liquid and then effecting a required measurement on the reaction liquid, and a discarding station arranged at an outlet side of said reaction line and releasing the reaction vessel from said reaction line and discarding it, the

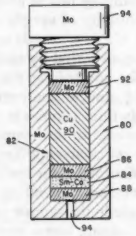
improvement in which said supply station is operatively associated with a constant temperature device so as to maintain the reaction vessel at its given temperature.

4,260,582

DIFFERENTIAL EXPANSION VOLUME COMPACTION

Kaplesh Kumar, Wellesley, and Dilip K. Das, Bedford, both of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Jul. 18, 1979, Ser. No. 58,530
Int. Cl.³ B29C *1/00*
U.S. Cl. 264—111 **14 Claims**



1. A process for the formation of high density pressed parts comprising:

subjecting a volume of particulate material which is to be formed into a pressure molded shape to a compressive, article producing force produced by thermal expansion of an expandible element; and

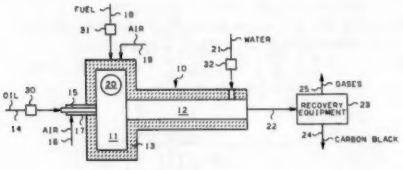
constraining said element against expansion except toward said material to produce amplification of the compressive force on said material by flow of said element.

4,260,583

REDUCTION OF DEPOSITS IN CARBON BLACK REACTORS

Amaury Sanclemente, Cali, Colombia, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 533,449, Dec. 16, 1974, Pat. No. 3,972,985. This application Apr. 8, 1976, Ser. No. 675,001
Int. Cl.³ C09C *1/48*
U.S. Cl. 422—151 **6 Claims**



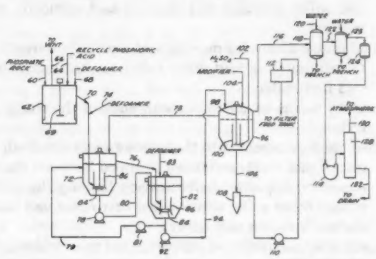
1. In a system for producing carbon black in a reactor wherein a feed oil is introduced into the reactor through first conduit means, and heat is supplied to the reactor to elevate the temperature of the feed oil to decompose the oil to produce carbon black; apparatus to reduce deposits in the reactor comprising a first conduit of magnetizable material forming a section of said first conduit means, a rotatable element of magnetizable material positioned within said first conduit to impart a swirl to feed oil passed therethrough, a first coil enclosing said first conduit so that passage of direct current therethrough establishes a first magnetic field through which the feed oil passes, and means connected to said first coil to pass a direct current therethrough of such magnitude that said first magnetic field is at least 10 oersteds.

4,260,584

APPARATUS USEFUL FOR WET PROCESS PHOSPHORIC ACID PRODUCTION

Fernando Ore, Whittier; John D. Ellis, Huntington Beach, and James H. Moore, La Verne, all of Calif., assignors to Occidental Petroleum Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 703,138, Jul. 7, 1976, abandoned, Ser. No. 703,139, Jul. 7, 1976, Pat. No. 4,140,748, Ser. No. 865,556, Dec. 29, 1977, abandoned, and Ser. No. 865,557, Dec. 29, 1977, Pat. No. 4,196,172. This application May 26, 1978, Ser. No. 910,163
Int. Cl.³ B01J *19/18*; C01B *25/222*
U.S. Cl. 422—189 **23 Claims**



1. Apparatus useful for the preparation of phosphoric acid from phosphate rock and sulfuric acid, comprising in combination:

(a) a first reaction vessel or series of first reaction vessels having a slurry inlet means and suitable for containing a reaction mixture comprising a first slurry comprising calcium sulfate, monocalcium phosphate and phosphoric acid;

(b) means including a draft tube means in said first reaction vessel or in each vessel in said series of first reaction vessels for maintaining a continuous circulation of the slurry therein through said draft tube means at a rate of at least 50% of the volume of the slurry in said vessel per minute, said draft tube means being disposed centrally in said vessel or series of vessels and an agitator means within said draft tube means, whereby on actuation of said agitator means, the slurry in said vessel will flow through the interior of the draft tube means and, on exiting the draft tube means, the slurry will flow in the space between said draft tube means and the inner wall of the vessel;

(c) a second reaction vessel or series of second reaction vessels suitable for containing a second slurry comprising calcium sulfate, monocalcium phosphate, sulfuric acid and phosphoric acid;

(d) means including a draft tube means in said second reaction vessel or in each vessel in said series of second reaction vessels for maintaining a continuous circulation of the slurry therein through said draft tube means, at a rate of at least 50% of the volume of the slurry in said vessel per minute, said draft tube means being disposed centrally in said vessel or series of vessels and an agitator means within said draft tube means, whereby on actuation of said agitator means the slurry in said vessel will flow through the interior of said draft tube means and on exiting the draft tube means, the slurry will flow in the space between said draft tube means and the inner wall of the vessel;

(e) a first conduit means inter-connecting said first and second reaction vessels or said series of first and second reaction vessels for conducting said first slurry from said first reaction vessel or series of first reaction vessels to said second reaction vessel or series of second reaction vessels;

(f) a second conduit means interconnecting said first and second reaction vessels or series of first and second reaction vessels for conducting said second slurry from said second reaction vessel or series of second reaction vessels

to said first reaction vessel or series of first reaction vessels; and

(g) means for providing reduced pressure in said second reaction vessel or at least one vessel in a series of said second reaction vessels whereby temperature control can be effected in said second reaction vessel or series of second reaction vessels by evaporation, means to circulate slurry between said second reaction vessel, or series of second reaction vessels and said first reaction vessel at a sufficient rate so as to add desired sulfate values and phosphoric acid values to and to effect temperature control in said first reaction vessel, and means to form a vacuum seal between said first and second reaction vessels or series of vessels;

(h) inlet means suitable for introducing phosphate rock and phosphoric acid to said first reaction vessel or at least one vessel in a series of said first reaction vessels, said inlet means having a discharge means to the interior of the draft tube means in said first reaction vessel or at least one said vessel in a series of said first reaction vessels;

(i) means adapted for introducing sulfuric acid to said second reaction vessel or at least one vessel in a series of said second reaction vessels; and;

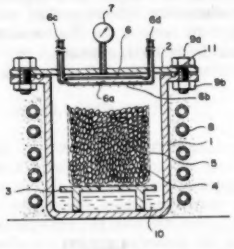
(j) means suitable for withdrawing slurry containing phosphoric acid and calcium sulfate from said second reaction vessel or at least one vessel in a series of said second reaction vessels.

4,260,585

APPARATUS FOR MANUFACTURE OF LOW-SODA ALUMINA GRANULES

Fumiyoshi Noda; Mikio Murachi, and Hideaki Ueno, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Feb. 16, 1978, Ser. No. 878,399
Int. Cl.³ B01D *11/02*; F28D *7/00, 21/00*
U.S. Cl. 422—208 **5 Claims**



1. Low-soda alumina granules manufacturing apparatus comprising

an autoclave,

a pressure resistant lid for maintaining a high pressure environment in said autoclave,

said autoclave having a perforated case therein in which alumina granules to be washed and cured are placed, said case being positioned on a draining stand supported on the bottom of the said autoclave;

said autoclave having therein before the start of operation, water in an amount sufficient to evaporate into steam saturating the inside of said autoclave;

said autoclave also including heating means to heat said water within the autoclave to evaporate the water into steam; and

said lid being provided with condenser means through which cooling water is circulated to condense steam in the autoclave to water;

said condenser means comprising a condensing surface above the granules through which the cooling water passes and circulates to cool down said condensing surface of said condenser means to condense steam surrounding said surface to form droplets of water which fall and drop onto the alumina granules in the perforated case;

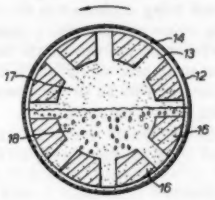
said water falling down onto the bottom of said autoclave after washing and passing through the granules being re-evaporated into steam by said heating means.

4,260,586

APPARATUS FOR CONTACTING LIQUIDS

Theodor J. M. Hohlbaum, Ilford, England, assignor to RTL Contactor Holding S.A., Zug, Switzerland

Filed Nov. 22, 1978, Ser. No. 962,969
Int. Cl.³ B01D *11/04*
U.S. Cl. 422—269 **6 Claims**



1. Apparatus for contacting immiscible or partly miscible liquids, comprising:

a container through which the liquids can flow substantially with the lighter phase above the heavier phase;

means for supplying to and withdrawing from the container the liquids as separate phases;

a plurality of discs within the container dividing the container into a series of connected compartments, the discs being mounted for rotation with, or rotation within the container; and

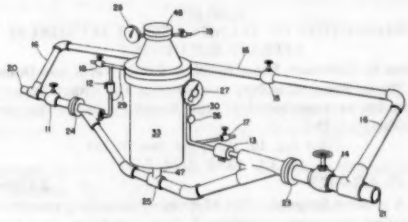
an interrupted ring of foraminous material, in each of at least some of the compartments and arranged for rotation therewith, the foraminous material being capable of receiving and temporarily storing liquid, whereby as the discs rotate, liquid is carried from one phase and is shed in the other phase.

4,260,587

PRESSURE COMPENSATED POTABLE WATER CHLORINATOR

John R. Braden, 315 Dewey Dr., Annapolis, Md. 21401

Filed Oct. 25, 1977, Ser. No. 844,778
Int. Cl.³ C02F *1/50*
U.S. Cl. 422—282 **10 Claims**



1. A system for dissolving a compound in a liquid flowing through a channel comprising:

diverting means in the channel for diverting a portion of the liquid into the system;

solution storage means for storing a concentrated solution of the compound in the liquid;

mixing means for mixing the concentrated solution from the

solution storage means into the liquid in the channel downstream from the diverting means;

tablet holding means for holding tablets of the compound so that the liquid entering from said diverting means will dissolve the tablets to produce the solution which flows to said solution storage means;

flow regulating means for regulating the rate of flow of the liquid through the tablet holding means so that the amount of solution stored in the solution storage means will tend to be constant;

pressure compensating means for adjusting the air and liquid pressures inside the system in response to changes in liquid pressure in the channel, said pressure compensating means comprises an air passageway and a pressure compensating tank, said tank being connected to the channel between the diverting means and the mixing means so that liquid may flow between the channel and the tank, with the tank having an air space near its top which is vented through the air passageway with an air space near the top of the tablet holding means.

4,260,588

PRODUCTION OF SULPHIDIC COPPER CONCENTRATES

Norbert L. Piret; Meinolf Höpper, and Herbert Kudelka, all of Duisburg, Fed. Rep. of Germany, assignors to Duisburger Dupferhutte, Duisburg, Fed. Rep. of Germany

Filed Sep. 10, 1979, Ser. No. 74,042

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1978, 2840424

Int. Cl.[3] **C01G** *3/12, 51/08, 53/08, 9/04*

U.S. Cl. 423—37 **9 Claims**

1. A process for the production of a sulphidic copper concentrate from a complex sulphidic concentrate containing as its main constituents copper, iron and at least one non-ferrous metal selected from the group consisting of zinc, lead, nickel and cobalt, comprising treating at elevated temperature above about 180° C. and pressure at a pH-value of below 3 a mixture of a complex sulphidic concentrate and a copper-containing predominantly chloridic solution, thereby to produce a sulphidic copper concentrate, the ratio of grams of concentrate: grams Cu in solution being a maximum of the order of about 5:1.

4,260,589

PRODUCTION OF ALUMINA FROM ALUMINUM NITRATE SOLUTIONS

Barlane R. Eichbaum, Reno; Judith A. Eisele, Verdi, and Donald J. Bauer, Reno, all of Nev., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jul. 10, 1979, Ser. No. 56,151

Int. Cl.[3] **C01F** *7/24, 7/30*

U.S. Cl. 423—123 **2 Claims**

1. A process for production of alumina consisting essentially of treating an aqueous solution of aluminum nitrate in a reaction vessel at a temperature of about 250° to 350° C. and a pressure of about 30 to 200 psi for a time sufficient to substantially completely hydrolyze the aluminum nitrate and form a solid product consisting essentially of noncrystalline alumina, said pressure being maintained by continually bleeding vapors from the reaction vessel and discharging said vapors into a chamber containing clay and water, wherein the clay is leached to form additional aluminum nitrate solution.

4,260,590

RECOVERY OF SALTS OF ANTHRAQUINONE DISULFONIC ACID IN THE STRETFORD PROCESS

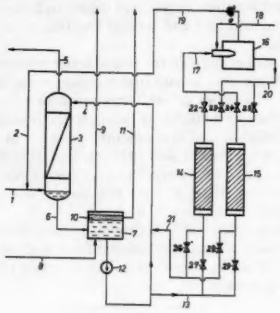
Günter Weber, Linden, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Hollriegelskreuth, Fed. Rep. of Germany

Filed Feb. 19, 1980, Ser. No. 122,798

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1979, 2906056

Int. Cl.[3] **B01D** *53/34*

U.S. Cl. 423—226 **9 Claims**



1. In a process for the treatment of hydrogen sulfide-containing feed gas stream comprising passing the feed gas stream through an absorber wherein the hydrogen sulfide is absorbed into a scrubbing liquid containing a salt of anthraquinone disulfonic acid in alkaline solution, regenerating the scrubbing liquid by passing air therethrough, and subsequently branching off a side stream from the regenerated scrubbing liquid to prevent a deleterious build-up of contaminants formed as by-products, the improvement comprising passing the side stream through an adsorption column packed with a macroporous resin to selectively remove the alkaline salts of anthraquinone disulfonic acid from the side stream.

4,260,591

PROCESS FOR PREPARING ALKALI METAL ALUMINUM PHOSPHATE

Robert E. Benjamin, and Thomas E. Edging, both of Nashville, Tenn., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 21, 1978, Ser. No. 972,097

Int. Cl.[3] **C01B** *25/30*

U.S. Cl. 423—267 **17 Claims**

1. In a process for the preparation of an alkali metal aluminum phosphate which comprises:

(a) contacting a food grade phosphoric acid having a concentration of about 70.0 to about 90.0 weight percent H_3PO_4 with a sufficient amount of an alkali metal ion selected from the group consisting of sodium, potassium and mixtures thereof and aluminum ion to form an alkali metal aluminum phosphate in a slurry; and

(b) drying the alkali metal aluminum phosphate; the improvement which comprises:

(1) contacting said alkali metal aluminum phosphate slurry with calcium sulfate subsequent to the initial formation of the alkali metal aluminum phosphate slurry in step (a) and prior to the completion of the drying in step (b).

4,260,592

MANUFACTURE OF WATER-INSOLUBLE AMMONIUM POLYPHOSPHATE

Hans A. Corver, and Allan J. Robertson, both of St. Catharines, Canada, assignors to Cyanamid Canada, Inc., Montreal, Canada

Filed Aug. 24, 1979, Ser. No. 69,416
Claims priority, application Canada, Dec. 18, 1978, 318105
Int. Cl.[3] C01B *15/16*
U.S. Cl. 423—305 1 Claim

1. A process for preparing a crystalline water-insoluble ammonium polyphosphate of the general formula:

$$H_{(n-m+2)}(NH_4)_mP_nO_{(3n+2)}$$

wherein n is an integer having an average value greater than 10, $^m/_n$ has an average value in the range of about 0.7 to 1.1, and the maximum value of m is equal to n+2, which process comprises feeding a melt of urea and a condensed phosphoric acid or a solid urea phosphate into the inlet of a jacketed oval-shaped tubular shell reaction zone maintained at a temperature in the range of about 285° C. to about 400° C. to provide a fuming viscous melt which adheres to surfaces of said reaction zone; venting gaseous products from said fuming viscous melt from a vent in the entry end of said reaction zone; constantly removing adherents from said surfaces to provide a powdery solid and advancing said solid to an exit end of said reaction zone at a rate consistent with formation of ammonium polyphosphate by driven paddles; and controlling release of said solid from said exit while recycling said gaseous products vented from said entry end of said reaction zone to said exit end thereof to provide a solid product having a pH in the range of about 4.5 to 6.5 as it exits said reaction zone.

4,260,593

PROCESS FOR THE MANUFACTURE OF AMMONIUM SULFAMATE

Reinhold Gräser, Frankfurt am Main, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 6, 1980, Ser. No. 127,565
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1979, 2909033
Int. Cl.[3] C01B *21/093*
U.S. Cl. 423—388 1 Claim

1. In a process for the manufacture of ammonium sulfamate by introducing sulfur trioxide and ammonia into a pressure vessel containing a melt that substantially consists of ammonium sulfamate and ammonium imidodisulfonate, while maintaining a molar ratio between NH_3 and SO_3 from 1.5:1 to 1.99:1 the improvement which comprises releasing the pressure vessel shortly from pressure after prolonged reaction periods and thus discharging the main quantity of the collecting inert gases.

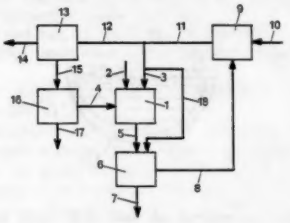
4,260,594

METHOD FOR THE MANUFACTURE OF CRYSTALS OF SODIUM CARBONATE MONOHYDRATE

Jean Verlaeten, and Maurice Preumont, both of Brussels, Belgium, assignors to Solvay & Cie., Brussels, Belgium

Filed Mar. 24, 1978, Ser. No. 890,013
Claims priority, application France, Mar. 25, 1977, 77 09256
Int. Cl.[3] B01D *9/02*
U.S. Cl. 423—421 14 Claims

1. In a method for the manufacture of crystals of sodium carbonate monohydrate in which solid sodium carbonate monohydrate is introduced into a carbonated aqueous liquor of sodium hydroxide, sodium carbonate monohydrate is crystallized from said carbonated aqueous liquor of sodium hydroxide above 35° C., and crystals of sodium carbonate monohydrate and a mother liquor are separated, the improvement comprising obtaining said solid sodium carbonate monohydrate as crystalline seeks by evaporating, between 35° C. and 107.5° C., a solution of sodium carbonate which is free from sodium hydroxide, and obtaining said crystals of sodium carbonate monohydrate by crystallization from said carbonated aqueous



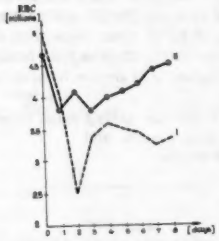
liquor of sodium hydroxide on said crystalline seeds, substantially without the creation of nuclei.

4,260,595

PHARMACEUTICAL COMPOSITIONS AND PROCESS FOR THE PREPARATION OF SAME

Karoly Lapis; Bela Szende; Andreas Jeney; Laszlo Kopper; Karoly Simon; Erno Tyihak; Lajos Kisfaludy; Lajos Kovacs, and György Dobo, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Filed Oct. 12, 1978, Ser. No. 950,579
Claims priority, application Hungary, Oct. 13, 1977, RI 649
Int. Cl.[3] A61K *31/195, 31/66, 31/475*
U.S. Cl. 424—10 4 Claims



1. A method of reducing toxic side effects in an animal subject treated with a compound selected from the group consisting of cyclophosphamide, ritosulfanum, vincristine, vinblastine, N-formylleurosine, and pharmaceutically effective salts thereof, which comprises administering to said subject in admixture with said compound, an amount of Nε-trimethyllysine or a pharmaceutically acceptable salt thereof, in a ratio of 1:1 to 1:100 effective to reduce said toxic effects.

4,260,596

EDIBLE UNIT DOSAGE FORM CONSISTING OF OUTER MANNITOL SHELL AND INNER LIQUID OR GEL CENTER AND METHOD FOR MANUFACTURING THE SAME

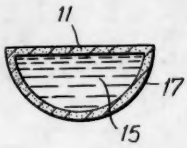
Leonard Mackles, New York, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

Filed Aug. 13, 1979, Ser. No. 66,307
Int. Cl.[3] A61K *9/00, 9/20, 9/28, 9/48*
U.S. Cl. 424—14 18 Claims

1. An edible unit dosage form capable of delivering a liquid or soft gel product comprising:

(a) an outer relatingly hard edible shell made of meltable material which is moldable by slush molding techniques and removable from the mold without residual tack, comprising from about 80% to about 100% by weight based on the total weight of the shell material of mannitol; and

(b) a liquid or gel center contained within said shell said liquid or gel center comprising an oil base or water-in-oil emulsion base containing a pharmaceutically effective



amount of medicament, said shell being sealed to the atmosphere with sealing material to contain said liquid or gel center within said shell.

4,260,597

THERMALLY REVERSIBLE DENTAL ASTRINGENT GELS

Don D. Porteous, 2794 Moraga Dr., Los Angeles, Calif. 90024

Continuation-in-part of Ser. No. 944,274, Sep. 21, 1978, abandoned. This application Sep. 4, 1979, Ser. No. 72,704

Int. Cl.[3] **A61K** *7/16, 31/74, 33/06, 31/19*

U.S. Cl. 424—49 **21 Claims**

1. A solid, tack-free, elastomeric, thermally reversible dental astringent gel composed of an admixture comprising:

(a) polyvinyl alcohol in an amount from about 5 to about 25 wt.%, said polyvinyl alcohol having a mole percent hydrolysis of at least about 99, a molecular weight from about 120,000 to about 150,000 and a 4 wt.% water solution viscosity at 20° C. from about 28 to about 32 centipoises as determined by the Hoeppler falling ball method,

(b) aluminum chloride in an amount from about 2 to about 12 wt.%,

(c) polyhydroxy aromatic gelling agent in an amount from about 1.3 to about 6 wt.%, and

(d) water to 100 wt.%.

4,260,598

METHOD FOR INCREASING ANTIBACTERIAL EFFECTIVENESS OF A β-LACTAM ANTIBIOTIC

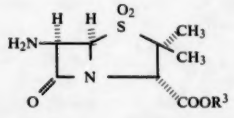
Wayne E. Barth, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 950,971, Oct. 18, 1978, abandoned, which is a continuation-in-part of Ser. No. 863,799, Dec. 23, 1977, abandoned. This application Oct. 22, 1979, Ser. No. 87,250

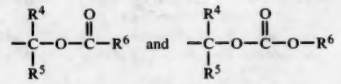
Int. Cl.[3] **A61K** *31/43*

U.S. Cl. 424—114 **6 Claims**

1. A method of increasing the antibacterial effectiveness of a β-lactam antibiotic in a mammalian subject, which comprises co-administering with said β-lactam antibiotic, to said mammalian subject, a β-lactam antibiotic effectiveness increasing amount of a compound of the formula



or a pharmaceutically-acceptable acid-addition salt thereof or a pharmaceutically-acceptable base salt thereof, wherein R^3 is selected from the group consisting of hydrogen, 3-phthalidyl, 4-crotonolactonyl, γ-butyrolacton-4-yl and groups of the formula



wherein R^4 and R^5 are each selected from the group consisting of hydrogen and alkyl having from 1 to 2 carbon atoms, and R^6 is alkyl having from 1 to 6 carbon atoms and

wherein said β-lactam antibiotic is selected from the group consisting of

6-(2-phenylacetamido)penicillanic acid,
6-(2-phenoxyacetamido)penicillanic acid,
6-(2-phenylpropionamido)penicillanic acid,
6-(D-2-amino-2-phenylacetamido)penicillanic acid,
6-(D-2-amino-2-[4-hydroxyphenyl]acetamido)penicillanic acid,
6-(D-2-[4-ethylpiperazin-2,3-dione-1-carboxamido]-2-phenylacetamido)penicillanic acid,
6-(D-2-[4-hydroxy-1,5-naphthyridine-3-carboxamido]-2-phenylacetamido)penicillanic acid,
6-(D-2-[imidazolidin-2-one-1-carboxamido]-2-phenylacetamido)penicillanic acid,
6-(D-[3-methylsulfonylimidazolidin-2-one-1-carboxamido]-2-phenylacetamido)penicillanic acid,
6-(D-2-[3-furfurylidineamino-2-oxoimidazolidine-1-carboxamido]-2-[4-hydroxyphenyl]acetamido)penicillanic acid,
7-(D-2-formyloxy-2-phenylacetamido)-3-([1-methyl-5-tetrazolyl]thiomethyl)-3-desacetoxymethylcephalosporanic acid,
7-(D-2-amino-2-[4-hydroxyphenyl]acetamido)desacetoxycephalosporanic acid,
7-(2-[2-thienyl]acetamido)cephalosporanic acid,
7-(2-[1-tetrazolyl]acetamido-3-([5-methyl-1,3,4-thiadiazoly-2-yl]thiomethyl)-3-desacetoxymethylcephalosporanic acid,
7-(D-2-amino-2-phenylacetamido)desacetoxycephalosporanic acid,
7-(D-2-hydroxy-2-phenylacetamido)-3-([1-methyl-5-tetrazolyl]thiomethyl)-3-desacetoxymethylcephalosporanic acid,
7-(2-[4-pyridylthio]acetamido)cephalosporanic acid,
7-(D-2-amino-2-[1,4-cyclohexadienyl]acetamido)cephalosporanic acid,
7-(D-2-[4-ethylpiperazin-2,3-dione-1-carboxamido]-2-[4-hydroxyphenyl]acetamido)-3-([1-methyl-5-tetrazolyl]-thiomethyl)-3-desacetoxymethylcephalosporanic acid,

and the pharmaceutically-acceptable salts thereof.

4,260,599

ANTIFIBROTIC SUBSTANCE P-1894B

Hisayoshi Okazaki, Kyoto; Tsuneo Kanamaru, Takatsuki, and Kazuhiko Ohta, Ikeda, all of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

Filed Jul. 26, 1979, Ser. No. 60,863

Claims priority, application Japan, Aug. 7, 1978, 53/96553

Int. Cl.[3] **A61K** *35/00*

U.S. Cl. 424—122 **6 Claims**

1. Antifibrotic substance P-1894B which has the following physical and chemical properties:

(a) Melting point: 165°–172° C.

(b) Elementary analysis: C, 62.62±1.0; H, 6.28±0.5; O, 30.06±1.0;

(c) Molecular weight: about 1000 (as determined by vapor pressure osmometry with ethyl acetate as the solvent);

(d) Specific rotation: $[\alpha]_D^{25} = +155° \pm 155°$ (c=0.419, methanol);

(e) Color reactions: positive naphthoresorcinol-sulfuric acid and alcoholic magnesium acetate reactions; negative ninhydrin and Barton's reactions;

(f) Solubility: readily soluble or soluble in chloroform, diox-

ane, ethyl acetate, dimethylsulfoxide, acetone, methyl ethyl ketone, pyridine, methanol, ethanol, benzene, toluene diethyl ether and 0.1 N NaOH; sparingly soluble or insoluble in water, 0.1 N HCl, petroleum ether, n-hexane and cyclohexane;

(g) Absorptions in the ultraviolet and visible region of the spectrum: the wavelengths (nm) giving absorption maxima immediately after dissolution in the following solvents:

Solvent	Wavelengths
90% aqueous methanol:	218 ± 2, 318 ± 2, 440 ± 2
0.1N HCl-90% aqueous methanol:	218 ± 2, 318 ± 2, 435 ± 2
0.1N NaOH-90% aqueous methanol:	228 ± 2, 282 ± 2, 530 ± 2

(h) Absorptions in the infrared region of the spectrum: the main wavenumbers giving absorption maxima as determined by the potassium bromide method:
3430, 2980, 2950, 1740, 1705, 1645, 1570, 1440, 1380, 1290, 1120, 1100, 1080, 1040, 1010, 970 cm^{-1}

(i) General property and appearance:
weakly acidic; crystals orange-yellow to orange-red.

4,260,600

METHOD OF TREATING DEPRESSION

Ronald Valle, 36 Fitch St., Carteret, N.J. 07008

Filed Oct. 22, 1979, Ser. No. 87,470
Int. Cl.³ A61K *31/135, 31/165, 33/02*
U.S. Cl. 424—166 **3 Claims**

1. A method of treating depression which comprises administering to a patient in need of such treatment a pharmaceutically effective combination of the following compounds in the following daily dosages

Acetaminophen	100–1,000 mg/day
Phenylephrine hydrochloride	1–10 mg/day
Phenylpropanolamine	5–30 mg/day
Phenyltoloxamine dihydrogen citrate	5–30 mg/day
Ammonium chloride	50–1,000 mg/day

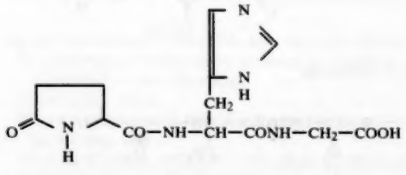
4,260,601

CHEMICAL COMPOUNDS

Karl-Ludwig Reichelt, and Olav E. Trygstad, both of Oslo, Norway, assignors to Nyegaard & Co. A/S, Oslo, Norway

Continuation of Ser. No. 940,018, Sep. 6, 1978. This application Oct. 23, 1979, Ser. No. 87,525
Int. Cl.³ A61K *37/00;* **C07C** *103/52*
U.S. Cl. 424—177 **9 Claims**

1. The compound of the formula:



(I)

(wherein the pyroglutamyl and histidyl moieties are of the L-series) and salts thereof.

4,260,602

HAPTEN POLYSACCHARIDE CONJUGATE MEDICAMENTS AND METHOD OF USE

Carlos Moreno, Hayes, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed Aug. 15, 1978, Ser. No. 933,877
Claims priority, application United Kingdom, Aug. 16, 1977, 34279/77
Int. Cl.³ A61K *31/73;* **C08B** *37/02;* **A61K** *31/715*
U.S. Cl. 424—180 **13 Claims**

1. A medicament-substituted hapten conjugate having a molecular weight of greater than 20,000, comprising a hapten selected from the group consisting of levane and dextrans in which a plurality of the hydroxy groups are substituted by one or more groups —CH_2—CO—NH—X—NHY, wherein X is a C_{1-8} alkylene group optionally substituted by hydroxy groups or a C_{2-7} alkyleneamino group, and Y is a medicament which causes an allergic reaction on administration to humans and animals and which contains a carboxy group or has been modified to contain such a group or a metabolite of such a medicament which contains a part of the molecule which is responsible for the allergic reaction and a carboxy group, the carboxy group in Y and the amino group in the substituent chain forming an amide linkage between the two.

12. A method for the treatment of immune hypersensitivity to a medicament in a mammal which comprises the administration of an effective dose of the appropriate medicament substituted hapten conjugate as defined in claim 1.

4,260,603

STEROL GLYCOSIDE WITH ACTIVITY AS PROSTAGLANDIN SYNTHETASE INHIBITOR

Karl H. Pegel, King George V Ave., Durban Natal, South Africa, and Hans Walker, Lindenweg 10, 3440 Eschwege, Fed. Rep. of Germany

Filed Jan. 2, 1979, Ser. No. 599
Int. Cl.³ A61K *31/705;* **C07J** *17/00*
U.S. Cl. 424—182 **31 Claims**

1. A medicament with activity as a prostaglandin synthetase inhibitor comprising a pharmaceutically acceptable carrier and an effective amount to act as a prostaglandin synthetase inhibitor of a sterol glycoside which is a glycoside of tall oil sterols, sitosterol, ergosterol, cholesterol, 5α-cholesterol, lanosterol, 24,25-dihydrolanosterol, stigmasterol, sitoor soybean sterols or a fatty acid ester of such a sterol glycoside or a spiroketal-steroid glycoside which is a glycoside of diosgenin, hecogenin, tigogenin, yamogenin, botogenin, correlogin neotiogonin or sisalagenin or a fatty acid ester of such a spiroketal-steroid glycoside.

7. A method of inhibiting a prostaglandinsynthetase in a mammal comprising administering to the mammal a composition according to claim 1 in an amount effective to inhibit the prostaglandin-synthetase.

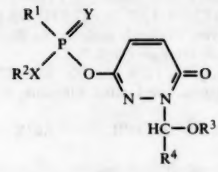
4,260,604

PYRIDAZINONYL-(DI)(THIO)-PHOSPHORIC (PHOSPHONIC) ACID ESTERS AS PESTICIDES

Annegrit Baumann, Mannheim; Heinrich Adolphi, Limburgerhof, both of Fed. Rep. of Germany; Rolf Huber, Boonton, N.J., and Karl Kiehs, Lampertheim, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 949,738, Oct. 19, 1978, abandoned. This application Oct. 5, 1979, Ser. No. 82,161
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1977, 2746207
Int. Cl.³ C07F *9/65;* **A01N** *57/24, 57/32, 57/16*
U.S. Cl. 424—200 **8 Claims**

1. A pyridazinonyl-(di)(thio)-phosphoric (phosphonic) acid ester, of the formula



I,

where X and Y each denote oxygen or sulfur, R^1 denotes linear or branched alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, mono- or dialkylamino of 1 to 4 carbon atoms in each alkyl, phenyl, or benzyl, R^2 denotes linear or branched alkyl of 1 to 4 carbon atoms, phenyl or benzyl, R^3 denotes linear or branched alkyl of 1 to 4 carbon atoms or phenyl, R^4 denotes linear or branched alkyl of 1 to 4 carbon atoms, or R^3 and R^4, together with the oxygen and the carbon atom whose substituents they are, form a tetrahydropyran or tetrahydrofuran ring which may be substituted by alkyl of 1 to 4 carbon atoms.

7. A pesticide comprising a solid or liquid carrier suitable for pesticide application and a pesticidally effective amount of the pyridazinonyl-(di)(thio)-phosphoric (phosphonic) acid ester of claim 1.

4,260,605

NOVEL ALKYLATED PREGNANES, PROCESSES FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

James Cairns, Cumbernauld; Robert T. Logan, Lanark; George McGarry, Airdrie; Robert G. Roy, Larkhall, and Gilbert F. Woods, Glasgow, all of Scotland, assignors to Akzo N.V., Arnhem, Netherlands

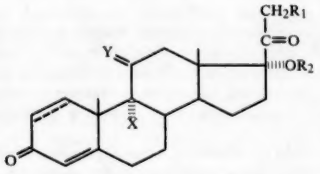
Filed Jan. 14, 1980, Ser. No. 111,941

Claims priority, application United Kingdom, Jan. 24, 1979, 02572/79

Int. Cl.[3] **A61K** *31/56;* **C07J** *5/00*

U.S. Cl. 424—243 **9 Claims**

1. A novel 21-alkylated steroid of the formula:



wherein R_1=alkyl (1-4 C); R_2=carboxyacyl (1-18 C); X=H, F or Cl; Y=O, H(OH), H(lower acyloxy), H(F) or H(Cl) with proviso that Y is not H(F) when X is F; and the dotted line indicates the optional presence of a double bond.

7. A pharmaceutical composition comprising an antiinflammatory effective amount of a compound of claim 1 and a pharmaceutically effective carrier therefor.

4,260,606

3-METHYLENEAZETIDINE DERIVATIVES

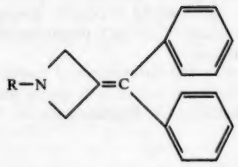
Albert D. Cale, Jr., Mechanicsville, Va., and Herndon Jenkins, Atlanta, Ga., assignors to A. H. Robins Company, Inc., Richmond, Va.

Filed Jul. 19, 1979, Ser. No. 59,093

Int. Cl.[3] **C07D** *205/08;* **A61K** *31/395*

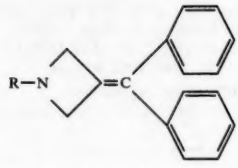
U.S. Cl. 424—244 **9 Claims**

1. 3-Methyleneazetidine compounds corresponding to the formula:



wherein R is a lower-alkyl radical and the pharmaceutically acceptable acid addition salts thereof.

6. A pharmaceutical composition for the treatment of depression in humans comprising a pharmaceutical carrier and an antidepresant quantity of a 3-methyleneazetidine compound corresponding to the formula:



wherein R is a lower-alkyl radical and the pharmaceutically acceptable acid addition salts thereof.

4,260,607

CEPHALOSPORIN ESTERS

Nobuharu Kakeya, Kawanishi, and Yoshinobu Yoshimura, Osaka, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

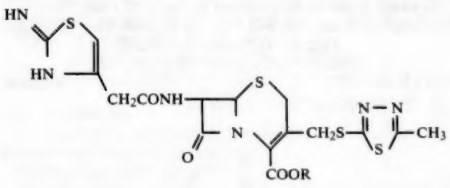
Continuation of Ser. No. 819,620, Jul. 27, 1977, abandoned. This application Sep. 18, 1979, Ser. No. 76,545

Claims priority, application Japan, Aug. 10, 1976, 51/95849

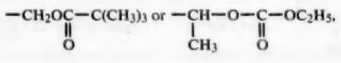
Int. Cl.[3] **C07D** *501/36*

U.S. Cl. 424—246 **5 Claims**

1. A cephalosporon derivative of the formula:



wherein R represents



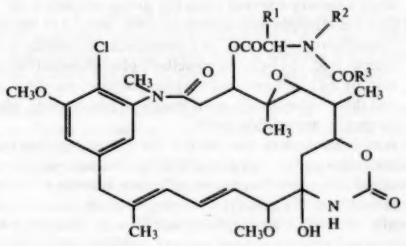
or a pharmaceutically acceptable acid addition salt thereof.

4,260,608
MAYTANSINOIDS, PHARMACEUTICAL COMPOSITIONS THEREOF AND METHODS OF USE THEREOF

Osamu Miyashita, Osaka, and Hiroshi Akimoto, Nishinomiya, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Nov. 9, 1979, Ser. No. 92,953
Claims priority, application Japan, Nov. 14, 1978, 53/139994
Int. Cl.[3] C07D *498/16;* A61K *31/535*
U.S. Cl. 424—248.54 10 Claims

1. A compound of the formula:



wherein

R^1 hydrogen, C_{1-7} alkyl, or $—A^1—Y^1$;

A^1 is C_{1-4} alkylene or a single covalent bond;

Y^1 is a C_{3-7} cycloalkyl, phenyl, indolyl or imidazolyl group,

R^2 is hydrogen, C_{1-7} alkyl, C_{3-7} cycloalkyl, C_{3-7} cycloalkyl-C_{1-4} alkyl or benzyl;

R^3 is C_{1-4} alkoxy, bornyloxy, isobornyloxy, benzyloxy or $—A^2—Y^2$;

A^2 is C_{1-4} alkylene or a single covalent bond; and

Y^2 is C_{3-7} alicyclic hydrocarbon or phenyl.

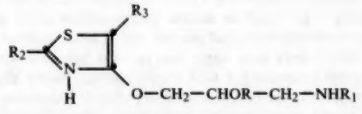
9. A method for inhibiting the growth of tumor cells in a warm-blooded animal which comprises administering to said warm-blooded animal an effective amount of a compound of claim **4**, **5**, **6**, **7**, **1**, **2**, or **3**.

4,260,609
DI- AND TRI- SUBSTITUTED THIAZOLES

John J. Baldwin, and Gerald S. Ponticello, both of Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 802,403, Jun. 1, 1977, abandoned. This application Apr. 17, 1978, Ser. No. 897,075
Int. Cl.[3] C07D *277/00*
U.S. Cl. 424—250 12 Claims

1. Compounds having the formula



and pharmaceutically acceptable salts thereof, wherein

R is hydrogen, C_2–C_{12} alkanoyl, benzoyl, naphthoyl, methylbenzoyl or phenylbenzoyl,

R_1 is C_1–C_{12} alkyl,

R_2 is a 6-membered-N-heteroaryl containing 1 or 2 N atoms in the ring, and

R_3 is C_1–C_6 alkyl, $—COOC_1—C_6$ alkyl, $COOC_6—C_{12}$ carbocyclic aryl, or C_6–C_{10} carbocyclicaryl wherein aryl is selected from phenyl, methylphenyl, biphenylyl and indanyl, cyano or CF_3.

4,260,610
DISUBSTITUTED PIPERAZINES

Gilbert Regnier, Chatenay-Malabry; Roger Canevari, Elancourt; Michel Laubie, Vaucresson, and Jean-Claude Poignant, Bures, all of France, assignors to Science Union Et Cie, Suresnes, France

Filed Nov. 3, 1978, Ser. No. 957,659
Claims priority, application United Kingdom, Nov. 9, 1977, 46646/77
Int. Cl.[3] A61K *31/495;* C07D *411/14, 417/14*
U.S. Cl. 424—250 5 Claims

1. A compound which is 1-[(2H)-1,3-benzoxathiol-5-yl methyl]-4-(thiazol-2-yl)piperazine or a physiologically tolerable acid addition salt thereof.

2. A compound which is 1-[(2H)-1,3-benzoxathiol-5-yl methyl]-4-(1,3,4-thiadiazol-2-yl)piperazine or a physiologically tolerable acid addition salt thereof.

3. A compound which is 1-[(2H)-1,3-benzoxathiol-5-yl methyl]-4-(pyrimidin-2-yl)piperazine or a physiologically tolerable acid addition salt thereof.

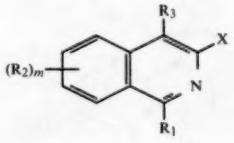
4. A pharmaceutical composition containing as active ingredient a compound of claim **3** in an amount of 25 to 250 mg, together with a suitable pharmaceutical carrier.

4,260,611
ISOQUINOLINE DERIVATIVES

Wilhelm Bartmann, and Elmar Konz, both of Bad Soden am Taunus, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 33,326, Apr. 25, 1979, abandoned. This application Sep. 17, 1979, Ser. No. 76,204
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1978, 2818423
Int. Cl.[3] A61K *31/47;* C07D *217/14, 217/16, 217/24*
U.S. Cl. 424—250 5 Claims

1. An isoquinoline of the formula



or a physiologically acceptable salt thereof in which

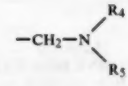
m is 1 or 2:

X is chlorine or bromine;

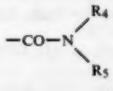
R_1 is phenyl or phenyl mono- or disubstituted by halogen, hydroxy, alkyl or alkoxy each having one to six carbon atoms, trifluoromethyl, unsubstituted amino or amino substituted by one or two alkyl groups having from one to six carbon atoms;

R_2 is hydrogen, halogen, hydroxy, alkyl or alkoxy having from one to four carbon atoms or methylenedioxy;

R_3 is carboxyl, cyano, hydroxymethyl, aminoalkyl of the formula



or a carboxylic acid amide of the formula



wherein R_4 and R_5 are identical or different and denote hydrogen or alkyl of 1 to 4 carbon atoms and wherein said alkyl may be substituted by an dialkylamino group

wherein R_6 and R_7 are identical or different and denote alkyl of from one to six carbon atoms; or R_4 and R_5 together with the nitrogen to which they are attached form a piperazine ring, the 4-nitrogen of which may be substituted by hydrogen, alkyl of one to four carbon atoms or hydroxy-alkyl of one to four carbon atoms.

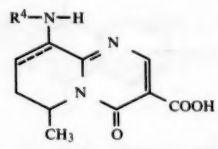
3. Antidepressive composition comprising an effective amount of the compound as defined in claim 1 and a physiologically acceptable auxiliary agent or carrier therefor.

4,260,612
ANTIALLERGIC NITROGEN BRIDGE-HEAD COMPOUNDS

Istvan Hermecz; Zoltan Meszaros; Tibor Breining; Sandor Virag; Lelle Vasvari nee Debreczi; Agnes Horvath; Gabor Nagy; Attila Mandi; Tamas Szüts; Istvan Bitteer, and Gyula Sebestyen, all of Budapest, Hungary, assignors to Chinoin Gyógyszer és Vecyeszeti Termekek Gyara Rt., Budapest, Hungary

Filed Dec. 11, 1978, Ser. No. 967,957
Claims priority, application Hungary, Dec. 29, 1977, CI 1795
Int. Cl.[3] A61K *31/505;* **C07D** *471/04*
U.S. Cl. 424—251 **8 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable salt, hydrate, stereoisomer, optically active isomer, geometric isomer, or tautomer thereof wherein the broken line is an optionally present carbon-carbon double bond;

and R^4 is phenyl or phenyl substituted by C_1 to C_4 alkyl, halo, C_1 to C_4 alkoxy or nitro.

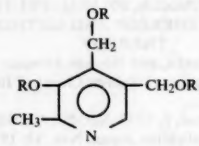
6. A method of treatment of an animal subject suffering from asthma, which comprises administering to the subject an effective amount of the compound defined in claim 1 or a pharmaceutically acceptable salt, hydrate, stereoisomer, optically active isomer, geometric isomer, or tautomer thereof.

4,260,613
PYRIDOXINE DERIVATIVES

Alberto Reiner, Como, Italy, assignor to Crinos Industria Farmacobiologica S.p.A., Italy

Division of Ser. No. 54,613, Jul. 3, 1979. This application Mar. 17, 1980, Ser. No. 131,020
Claims priority, application Italy, Jul. 31, 1978, 22637 A/78; May 23, 1979, 22939 A/79
Int. Cl.[3] A61K *31/44, 31/435;* **C07D** *213/30, 491/056*
U.S. Cl. 424—256 **9 Claims**

1. Pyridoxine derivative of the formula



(I)

wherein

each of the R groups represents a hydrogen atom or taken together represent an isopropylidene group and R_1 represents a moiety selected from the group consisting of

2-[(2,3-dimethylphenyl)-amino]-benzoic acid, 2-(3-benzoyl-phenyl)-propionic acid, d-2-(6-methoxy-2-naphthyl)-propionic acid, 2-[3-(trifluoromethyl)-phenylamino]-benzoic acid or 2-[3-trifluoromethyl)-phenylamino]-nicotinic acid and their addition salts with inorganic and organic, physiologically acceptable, acids.

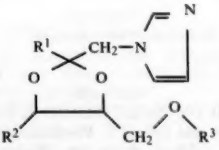
5. Anti-inflammatory composition for oral, parenteral, rectal administration or for topical application, characterized in that it contains an anti-inflammatory effective amount of at least one derivative of formula (I) according to claim 1, or a physiologically acceptable acid addition salt thereof, combined with conventional pharmaceutical carriers, vehicles, additives, fillers and/or stabilizers.

4,260,614
4-(2-(1H-IMIDAZOL-1-YLMETHYL)-1,3-DIOXOLAN-4-YL)METHOXYPYRAZOLO(3,4-B)PYRIDINES

Hans Hoehn, Tegernheim, Fed. Rep. of Germany, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Feb. 8, 1980, Ser. No. 119,908
Int. Cl.[3] C07D *471/02;* **A61K** *31/435*
U.S. Cl. 424—256 **13 Claims**

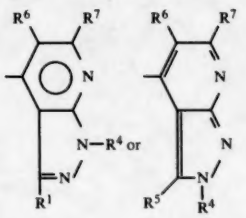
1. A compound of the formula



wherein R^1 is hydrogen; lower alkyl containing 1 to 7 carbon atoms; substituted or unsubstituted phenyl-lower alkyl containing 1 to 7 carbon atoms in the lower alkyl group, and wherein the phenyl group in the above may bear zero, one or two halogen, hydroxy, lower alkyl containing 1 to 7 carbon atoms, lower alkylthio containing 1 to 7 carbon atoms, lower alkoxy containing 1 to 7 carbon atoms, cyano and/or nitro groups; substituted or unsubstituted phenyl, wherein the phenyl group in the above may bear zero, one or two halogen, hydroxy, lower alkyl containing 1 to 7 carbon atoms, lower alkylthio containing 1 to 7 carbon atoms, lower alkoxy containing 1 to 7 carbon atoms, cyano and/or nitro groups; substituted or unsubstituted 5- or 6-membered monocyclic aromatic heterocyclic containing one O, S or N atom selected from the group consisting of furan, pyridine and thiophene, wherein the heterocyclic may bear zero or one halogen, hydroxy, lower alkyl containing 1 to 7 carbon atoms, lower alkylthio containing 1 to 7 carbon atoms, lower alkoxy containing 1 to 7 carbon atoms, cyano or nitro group;

R^2 is hydrogen, lower alkyl containing 1 to 7 carbon atoms, or phenyl;

R^3 is



wherein R^4, R^5, R^6 and R^7 may be the same or different and each is hydrogen, lower alkyl containing 1 to 7 carbon atoms, halogen, carboxyl, COO-lower alkyl containing 1 to 7 carbon atoms, phenyl, benzyl, or phenyl or benzyl substituted with one or two halogen, hydroxy, lower alkyl containing 1 to 7 carbon atoms, lower alkylthio containing 1 to 7 carbon atoms, lower alkoxy containing 1 to 7 carbon atoms, cyano and/or nitro groups; and

physiologically acceptable acid-addition salts thereof.

13. A method for treating bacterial or fungal infections in mammals which comprises administering to a mammalian host an antibacterial or antifungal effective amount of a compound as defined in claim **1**.

4,260,615

ANTIMALARIAL COMPOSITIONS

Wolfgang Raether, Dreieich; Walter Dürckheimer, Hattersheim am Main, and Hans Seidenath, Bad Nauheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 26, 1978, Ser. No. 954,900

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1977, 2748333

Int. Cl.[3] **A61K** *31/435, 31/47*

U.S. Cl. 424—257 **3 Claims**

1. An anti-malarial composition containing as the active ingredient a mixture of 7-chloro-10-hydroxy-3-(4-trifluoromethyl-phenyl)-3,4-dihydroacridino-1,9-(2H, 10H)-dione and 7-chloro-4-(diethylamino-1-methylbutylamino)-quinoline (Chloroquine), in a proportion by weight of between 4:1 and 1:20.

4,260,616

ANTIMICROBIAL IMIDAZOLYLETHOXYMETHYL DERIVATIVES OF 1,3-DIOXOLO QUINOLINES

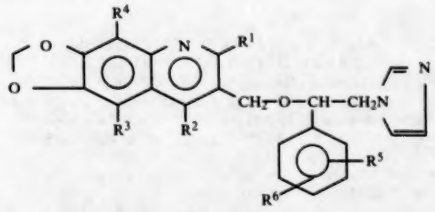
Hans Hoehn, Tegernheim, Fed. Rep. of Germany, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 78,344, Sep. 24, 1979. This application Feb. 14, 1980, Ser. No. 121,345

Int. Cl.[3] **A61K** *31/47;* **C07D** *491/056*

U.S. Cl. 424—258 **7 Claims**

1. A compound of the formula



wherein R^1 to R^6 each is hydrogen, hydroxy, halogen, lower alkyl containing 1 to 7 carbons, lower alkoxy containing 1 to 7 carbons or lower alkylthio containing 1 to 7 carbons, provided that at least one of R^1 to R^6 is other than hydrogen, halogen or lower alkyl; or a physiologically acceptable acid addition salt thereof.

7. A method for treating bacterial or fungal injections in mammals which comprises administering to a mammalian host an effective amount of a compound as defined in claim **1**.

4,260,617

17-CYCLOPROPYLMETHYL-14-HYDROXY-3-METHOXYMORPHINAN-6-ONE AND METHOD OF TREATING PAIN WITH IT

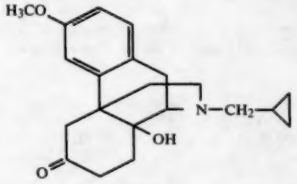
Raj K. Razdan, Belmont, and Anil C. Ghosh, Lexington, both of Mass., assignors to SISA, Incorporated, Cambridge, Mass.

Filed Dec. 17, 1979, Ser. No. 104,587

Int. Cl.[3] **A61K** *31/485;* **C07D** *221/28*

U.S. Cl. 424—260 **6 Claims**

1. 17-cyclopropylmethyl-14-hydroxy-3-methoxymorphinan-6-one characterized by the formula:



4. A therapeutic method for treating pain in an individual for whom such therapy is indicated, which method comprises administering to the individual an effective analgesic amount of 17-cyclopropylmethyl-14-hydroxy-3-methoxymorphinan-6-one.

4,260,618

6-(1'-HYDROXYETHYL)-2-SUBSTITUTED-PEN-2-EM-3-CARBOXYLIC ACID

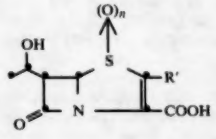
Burton G. Christensen, Metuchen, N.J., Frank P. Dininn, Old Bridge, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 852,275, Nov. 17, 1977, abandoned. This application Oct. 10, 1978, Ser. No. 948,711

Int. Cl.[2] **A61K** *31/43;* **C07D** *499/44*

U.S. Cl. 424—263 **3 Claims**

1. A compound having the structural formula



and the pharmaceutically acceptable salts and conventional penicillin esters thereof; wherein: R' is hydrogen, —R, —OR, —SR, $—NR_2$; wherein R is substituted and unsubstituted: alkyl, having 1–6 carbon atoms, phenyl, phenylalkyl having 7–12 carbon atoms, heterocyclyl and heterocyclylalkyl wherein the alkyl has 1–3 carbon atoms and the heterocycle has 1–4 hetero atoms selected from O, N, and S; and wherein the chain or nuclear substituent on R is selected from amino, mono-, di- and trialkylamino (each alkyl having 1–6 carbon atoms), hydroxyl, alkyloxyl, having 1–6 carbon atoms, mercapto, alkylthio having 1–3 carbon atoms, phenylthio, sulfamoyl, amidino, guanidino, nitro, chloro, bromo, fluoro, cyano, and carboxyl; R' is not $—SCH_2CH_2NH_2$; n is 0 or 1; when n=1 R is not —SR.

3. A pharmaceutical composition comprising an antibacterial effective amount of a compound according to claim **1** and a pharmaceutical carrier therefor.

4,260,619

2-AMINOALKYL-5-PYRIDINOLS

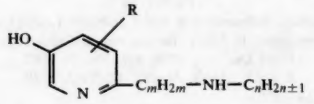
Renat H. Mizzoni, Prescott, Ariz., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 35,668, May 3, 1979, abandoned. This application Feb. 19, 1980, Ser. No. 122,463

Int. Cl.[3] **C07D** *213/74;* **A61K** *31/44*

U.S. Cl. 424—263 **8 Claims**

1. Secondary 2-aminoalkyl-5-pyridinols of the formula



wherein R is hydrogen or methyl, m is an integer from 2 to 4 and n is an integer from 1 to 7; or a pharmaceutically acceptable acid addition salt thereof.

7. A cardioprotective pharmaceutical composition comprising a correspondingly effective amount of a compound claimed in claim **1**, together with a pharmaceutical excipient.

4,260,620

2-PYRIDINECARBOXYLIC ACIDS

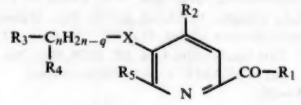
Neville Finch, West Orange, and Renat H. Mizzoni, Long Valley, both of N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 905,320, May 12, 1978, Pat. No. 4,197,302, which is a continuation-in-part of Ser. No. 890,441, Mar. 27, 1978, Pat. No. 4,202,901, which is a continuation-in-part of Ser. No. 787,718, Apr. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 663,940, Mar. 4, 1976, abandoned. This application Oct. 26, 1979, Ser. No. 88,730

Int. Cl.[3] **C07D** *213/55, 213/56;* **A61K** *31/455*

U.S. Cl. 424—266 **7 Claims**

1. A compound of the formula



wherein R_1 is hydroxy, lower alkoxy, amino, mono- or di-lower alkylamino or hydrazino, R_2 is hydrogen, lower alkyl, lower alkoxy or halogeno, X is sulfur, R_3 is hydrogen, R_4 is hydrogen, hydroxy or COR_1, R_5 is R_2 or COR_1, n is an integer from 1 to 7, q is 1 or 3, (n−q) is positive, the N-oxide or a therapeutically useful salt thereof.

7. A method of treating a mammal suffering from hypertension, which comprises administering to said mammal in need of such treatment enterally or parenterally an effective amount of the composition as claimed in claim **6**.

4,260,621

3-AMINO-4-PHENYL-6-PIPERIDINO-1H-PYRAZOLO[3,4-B]-PYRIDINES AND SALTS THEREOF

Josef Roch; Erich Müller; Berthold Narr; Josef Nickl, and Walter Haarmann, all of Biberach, Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

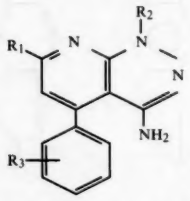
Continuation-in-part of Ser. No. 834,114, Sep. 19, 1977, Pat. No. 4,182,887. This application Sep. 13, 1979, Ser. No. 75,100

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1976, 2643753

Int. Cl.[3] **A61K** *31/445*

U.S. Cl. 424—267 **2 Claims**

1. An antithrombotic pharmaceutical dosage unit composition consisting essentially of an inert pharmaceutical carrier and an effective antithrombotic amount of a compound of the formula



wherein

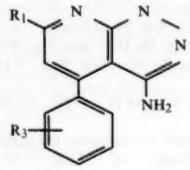
R_1 is unsubstituted, mono-substituted or di-substituted piperidino, where the substituents are selected from the group consisting of methyl, hydroxymethyl, hydroxyl, phenyl and benzyl;

R_2 is hydrogen, methyl or benzyl; and

R_3 is hydrogen, halogen, alkyl of 1 to 3 carbon atoms or alkoxy of 1 to 3 carbon atoms;

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

2. The method of preventing or relieving thrombosis in a warm-blooded animal in need thereof, which comprises perorally, parenterally or rectally administering to said animal an effective antithrombotic amount of a compound of the formula



wherein

R_1 is unsubstituted, mono-substituted or di-substituted piperidino, where the substituents are selected from the group consisting of methyl, hydroxymethyl, hydroxyl, phenyl and benzyl;

R_2 is hydrogen, methyl or benzyl; and

R_3 is hydrogen, halogen, alkyl of 1 to 3 carbon atoms or alkoxy of 1 to 3 carbon atoms;

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

4,260,622

ANIMAL FEEDSTUFFS EMPLOYING 3,4,5-TRIHYDROXYPIPERIDINES

Bodo Junge; Hans P. Krause; Lutz Müller, and Walter Puls, all of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

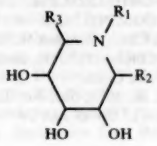
Division of Ser. No. 936,280, Aug. 23, 1978. This application Sep. 20, 1979, Ser. No. 77,507

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1977, 2738717; Dec. 24, 1977, 2758025

Int. Cl.[3] **A61K** *31/445*

U.S. Cl. 424—267 **3 Claims**

1. An animal feedstuff or premix thereof which contains an amount effective for increasing the proportion of lean meat to undesired fat of an active compound of the formula

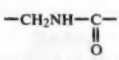


I

in which

R_1 is C_1–C_{30} alkyl, C_2–C_{18} alkenyl, C_2–C_{18} alkinyl, C_3–C_8 cycloalkyl, C_3–C_8 cycloalkenyl, C_3–C_8-cycloalkinyl or phenyl (a), said alkyl, cycloalkyl, cycloalkenyl and cycloalkinyl being unsubstituted or substituted by hydroxy, C_1–C_4-alkoxy, acyloxy, amino, mono-C_1–C_4 alkylamino, di-C_1–C_4 alkylamino, acylamino, mercapto, C_1–C_4 alkylthio, halogen, C_1–C_4 alkylcarbonyl, carboxyl, nitro, cyano, formyl, sulfo, naphthyl or phenyl (b); said acyl being derived from an aliphatic carbocyclic acid having from 1 to 7 C-atoms, a phenyl carboxylic acid, unsubstituted or substituted by carboxy, hydroxy, halogen, C_1 to C_4 alkyl, C_1–C_4 alkoxy, nitro or amino; said phenyl (a) being unsubstituted or substituted by C_1 to C_{10} alkyl, C_1 to C_{10} chloroalkyl, C_1 to C_{10} nitroalkyl, C_1 to C_{10} cyanoalkyl, C_1 to C_{10} alkenyl, hydroxyl, C_1 to C_4 alkoxy, amino, mono-C_1 to C_4 alkylamino, di-C_1–C_4 alkylamino, mercapto, C_1–C_4 alkylthio, carboxyl, C_1–C_4 carbalkoxy, sulfo, C_1–C_4 alkylsulfonyl, phenylsulfonyl, aminosulfonyl, C_1–C_4 alkylaminosulfonyl, di-C_1–C_4 alkylaminosulfonyl, nitro, cyano, formyl, C_1–C_4 alkylcarbonylamino, C_1–C_4 alkylcarbonyl, benzoyl, benzylcarbonyl or phenylacylcarbonyl;

said naphthyl and phenyl (b) being unsubstituted or substituted by hydroxyl, amino, C_1–C_4 alkylamino, di-C_1–C_4 alkylamino, C_1–C_4 alkoxy, nitro, cyano, carboxy, C_1–C_4 alkoxycarbonyl, C_1–C_6 alkyl, halogen, C_1–C_4 alkylthio, mercapto, C_1–C_4 alkylsulfonyl, sulfoaminosulfonyl or C_1–C_4 alkylaminosulfonyl R_2 is —H, —OH, —SO_3H, —CN, —CH_2NH_2, —CH_2NH— (C_1 to C_{14}-alkyl),



(C_1 to C_{14}-alkyl), —CH_2—NH—SO_2— (C_1 to C_{14}) alkyl, —CH_2—NH—SO_2-phenyl,

—CH_2—NH—C(=O)—phenyl,

—CH_2—NH—C(=O)—NH (C_1 to C_{14}-alkyl),

—CH_2—NH—C(=O)—NH-phenyl,

—CH_2—NH—C(=S)—NH (C_1 to C_{14}-alkyl),

—CH_2—NH—C(=S)—NH-phenyl,

—CH_2—NH—C(=O)—O— (C_1 to C_{14}-alkyl) or

—CH_2—NH—C(=O)—O-phenyl

wherein phenyl is unsubstituted or substituted by methyl, ethyl, methoxy, or nitro,

R_3 is —H, —CH_3, —CH_2OH, —CH_2—NH_2, NHR′—CH_2—, NR′R″—CH_2—, R′CONH—CH_2 R′CO—NR″CH_2—, R′O—CH_2—, R′COOCH_2—, R′SO_2NHCH_2—, R′SO_2—NR″CH_2—, R′NH—CO—NH—CH_2—, R′NHCS—NH—CH_2—, R′O—CO—NH—CH_2—, wherein R′ and R″ are the same or different and each has the meaning hydrogen or any of the meanings given above for R_1,

in admixture with an edible non-toxic feed carrier.

4,260,623

HEXAHYDRO-1-ARYLSPIRO(3H-OXAZOLO(3,4-a)PYRIDINE-3,4′-PIPERIDENE) ANTIDEPRESSANTS, PHARMACEUTICAL COMPOSITIONS THEREOF AND METHOD OF USE THEREOF

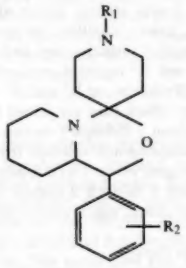
Horace A. De Wald, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Nov. 26, 1979, Ser. No. 97,571

Int. Cl.[3] **C07D** *498/20;* **A61K** *31/445*

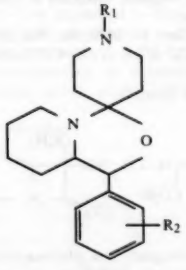
U.S. Cl. 424—267 **11 Claims**

1. A compound of the formula



where R_1 is hydrogen, lower alkyl containing one to three carbon atoms, cycloalkyl lower alkyl containing four to seven carbon atoms, or benzyl; and R_2 is hydrogen, halogen, alkoxy containing one to three carbon atoms, or trifluoromethyl; and pharmaceutically acceptable acid addition salts thereof.

11. A method of treating depression in mammals comprising the administration of an anti-depressive effective amount of a compound of the formula



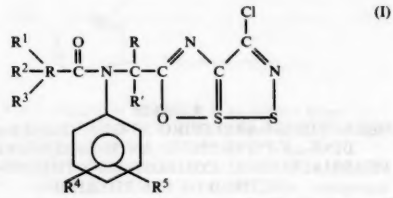
where R_1 is hydrogen, lower alkyl containing one to three carbon atoms, cycloalkyl lower alkyl containing four to seven carbon atoms, or benzyl; and R_2 is hydrogen, halogen, alkoxy containing one to three carbon atoms, trifluoromethyl; or of a pharmaceutically acceptable salt thereof.

4,260,624
FUNGICIDAL 2-SUBSTITUTED-3-OXA-3A LAMBDA 4,4-DITHIA-6-CHLORO-1,5-DIAZAPENTALENE

Joseph E. Moore, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 31, 1980, Ser. No. 117,152
Int. Cl.[3] A01N *43/82, 43/90;* C07D *513/04*
U.S. Cl. 424—270 28 Claims

1. A compound selected from the group having the formula



(I)

wherein

R and R′ are independently selected from the group consisting of hydrogen and lower alkyl;

R^1 is hydrogen or lower alkyl;

R^2 and R^3 are independently selected from the group consisting of hydrogen, lower alkenyl, hydroxy, lower hydroxyalkenyl, lower alkoxy, lower alkoxyalkyl, lower alkoxyalkenyl, lower alkylthio, halogen, and haloalkyl having 1 through 3 carbon atoms and 1 through 4 halo atoms; or R^2 and R^3 together are lower alkylidiene or lower alkoxyalkylidiene; or R^2 and R^3 together with the carbon atom to which they are joined form a cycloalkyl group having from 3 through 7 carbon atoms; and

R^4 and R^5 are independently selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, halogen, haloalkyl having 1 through 2 carbon atoms and from 1 through 4 halo atoms, nitro, cyano, and di(lower alkyl-)amino;

and compatible salts thereof.

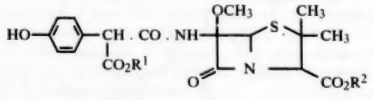
27. A fungicidal composition comprising an amount of the compound of claim 1 effective to prevent or arrest fungi and a compatible inert carrier.

4,260,625
PENICILLINS

Kenneth D. Hardy, Horsham, and George Burton, Carshalton Beeches, both of England, assignors to Beecham Group Limited, Great Britain

Filed Dec. 10, 1979, Ser. No. 101,488
Int. Cl.[3] A61K *31/43;* C07D *499/46*
U.S. Cl. 424—271 13 Claims

1. A penicillin of formula:



wherein R^2 is hydrogen or a pharmaceutically acceptable salting ion or in vivo hydrolysable ester radical; and R^1 is hydrogen, a pharmaceutically acceptable salting ion, or a pharmaceutically acceptable ester forming radical.

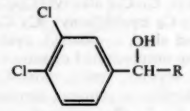
9. An antibacterial composition comprising an antibacterial amount of a compound of claim 1 and a pharmaceutically acceptable carrier or excipient.

4,260,626
TETRAHYDRO AND IMIDAZOLINE ANTISECRETORY COMPOUNDS

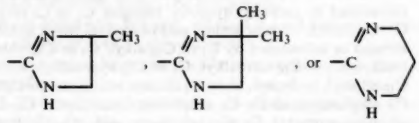
Albert A. Carr; Hsien C. Cheng; Stephen W. Horgan, and James K. Woodward, all of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

Filed Mar. 26, 1979, Ser. No. 23,920
Int. Cl.[3] C07D *233/04*
U.S. Cl. 424—273 R 12 Claims

1. A compound of the formula



wherein R is



and pharmaceutically acceptable salts, diasteriomers and individual optical isomers thereof.

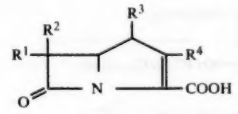
9. A method of treating the conditions due to hypersecretion of gastric acid in a patient in need thereof which comprises administering to said patient an effective amount of a compound of claim 1.

4,260,627
1-, 6- AND 2-SUBSTITUTED-1-CARBA-2-PENEM-3-CARBOXYLIC ACIDS

Burton G. Christensen, Metuchen, and David H. Shih, Edison, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 24, 1978, Ser. No. 954,271
Int. Cl.[3] C07D *487/04;* A61K *31/40*
U.S. Cl. 424—274 6 Claims

1. A compound having the structure:



and the pharmaceutically acceptable salts thereof; wherein R^1, R^2, R^3 and R^4 are independently selected from the group consisting of hydrogen (R^3 is not hydrogen), and substituted and unsubstituted: alkyl having 1–6 carbon atoms, alkenyl and alkynyl having 2–6 carbon atoms, aryl and aralkyl having 6–10 ring carbon atoms and 1–6 carbon atoms in the alkyl chain, cycloalkyl and cycloalkylalkyl having 3 to 6 ring carbon atoms and 1–6 carbon atoms in the alkyl moiety; wherein the substituents on R^1, R^2, R^3 and R^4 are selected from chloro, bromo, fluoro, hydroxyl, amino, mono-, di- and trialkyl substituted amino (each alkyl having 1–6 carbon atoms) alkoxyl having 1–6 carbon atoms, guanidino, cyano, amidino and carboxyl; with the proviso that R^4 is not hydrogen.

4,260,628
2-GUANIDINOMETHYL-INDOLINES

Rochus Jonas, Darmstadt; Hans-Jochen Schliep, Traisa, and Ernst Schorscher, Darmstadt-Arneilgen, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

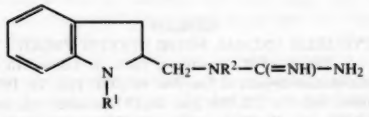
Division of Ser. No. 939,046, Sep. 1, 1978, abandoned. This application Sep. 26, 1979, Ser. No. 78,855

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1977, 2739723

Int. Cl.[3] **A61K** *31/40;* **C07D** *209/14*

U.S. Cl. 424—274 **10 Claims**

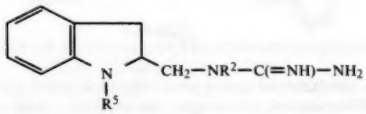
1. A 2-guanidinomethyl-indoline of the formula



wherein R^1 and R^2 each independently is H or alkyl of 1–6 carbon atoms, or the physiologically acceptable acid addition salts thereof.

9. A method of treating hypertension which comprises administering an antihypertensively effective amount of a compound of claim **1**.

10. An indoline derivative of the formula



wherein R^5 is benzyl, tolylmethyl, diphenylmethyl or carbobenzoxy and R^2 is H or alkyl of 1–6 carbon atoms, or the acid addition salts thereof.

4,260,629
TREATING PAIN WITH ACETAMINOPHEN AND 1,4-DIMETHYL-5-P-CHLOROBENZOYL-PYRROLE-2-ACETIC ACID

William K. Schmidt, Wilmington; Christine Smith, Newark; Dewey H. Smith, Jr., Wilmington, and Vernon G. Vernier, Newark, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 25, 1979, Ser. No. 88,119

Int. Cl.[3] **A61K** *31/40, 31/165*

U.S. Cl. 424—274 **6 Claims**

1. A method of alleviating pain in a mammal which comprises administering orally to said mammal an effective analgesic amount of a composition consisting essentially of zomepirac or a pharmaceutically suitable salt thereof and acetaminophen in a weight ratio of from about 1:10 to about 1:800.

4,260,630
SKIN DISEASES

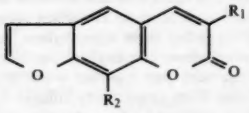
Emile R. Bisagni; Dietrich Averbeck; Ethel Moustacchi, all of Orsay, and Francois Zajdela, Anthony, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly sur Siene, France

Filed Aug. 29, 1977, Ser. No. 828,866

Int. Cl.[3] **A61K** *31/35*

U.S. Cl. 424—283 **16 Claims**

1. A method of treating psoriasis by administering to a patient afflicted therewith an effective amount of a therapeutically-acceptable composition comprising carrier and an effective amount of a monofunctional derivative of psoralen of the formula



wherein

R_1 is —$COOR_3$ or —CN,

R_2 is —H or —CH_3, and

R_3 is —H, —CH_3 or —CH_2CH_3,

in conjunction with a sufficient dose of 356 mm U.V. irradiation.

4,260,631
ORAL ADMINISTRATION OF SALINOMYCIN TO PIGS

Günter Dost, Kelkheim, and Fritz Bauer, Bad Soden am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 290,602, Apr. 25, 1977, abandoned. This application Jul. 10, 1979, Ser. No. 56,197

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1976, 2618269

Int. Cl.[3] **A61K** *31/34*

U.S. Cl. 424—283 **14 Claims**

1. The method for improving the growth and nutrient efficiency of pigs free of swine dysentery, which method comprises orally administering thereto an effective amount of an active agent selected from the group consisting of Salinomycin, physiologically acceptable salts thereof, and physiologically acceptable esters thereof.

4,260,632
ALKANOLAMINE DERIVATIVES

Leslie H. Smith, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 015,411, Feb. 26, 1979, Pat. No. 4,221,807, which is a division of Ser. No. 787,375, Apr. 14, 1977, Pat. No. 4,141,987, which is a division of Ser. No. 582,883, Jun. 2, 1975, Pat. No. 4,034,106. This application Feb. 22, 1980, Ser. No. 123,926

Claims priority, application United Kingdom, Jun. 5, 1974, 24837/74

Int. Cl.[3] **A61K** *31/34;* **C07D** *307/46, 307/60, 307/66*

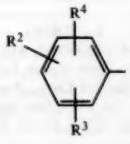
U.S. Cl. 424—285 **10 Claims**

1. An alkanolamine derivative selected from a compound of the formula:

$$R.OCH_2.CHOH.CH_2NH—A—NH—X—Y—R^1$$

wherein A is alkylene of from 2 to 12 carbon atoms; wherein X is carbonyl (—CO—) or sulphonyl (—SO_2—); wherein Y is a direct link, or is alkylene, oxyalkylene or alkyleneoxy each of up to 6 carbon atoms, or imino (—NH—), or alkylimino, iminoalkylene, iminoalkyleneoxy or iminoalkylenecarbonyloxy each of up to 6 carbon atoms, or oxygen; wherein R^1 is furyl and wherein

R is aryl of the formula:



wherein R^2 and R^3, which may be the same or different, each is hydrogen, halogen, hydroxy, amino, nitro or cyano, or alkyl, hydroxyalkyl, cycloalkyl, alkenyl, alkynyl,

alkoxy, alkylthio, cycloalkoxy, alkenyloxy, alkynyloxy or alkanoyl each of up to 6 carbon atoms or aryl, aryloxy or dialkylamino each of up to 12 carbon atoms; or wherein R^2 and R^3 together form trimethylene, tetramethylene, 1-oxotetramethylene, propenylene, but-2-enylene or buta-1,3-dienylene such that together with the adjacent benzene ring they form respectively indanyl, 5,6,7,8-tetrahydronaphthyl, 5-oxo-5,6,7,8-tetrahydronaphthyl, indenyl, 5,8-dihydronaphthyl or naphthyl; and wherein R^4 is hydrogen or amidic of the formula:

$R^{15}R^{16}N—CO—Q—$

$R^{15}R^{16}N—CO—NH—Q—$

$R^{15}R^{16}N—CO—Q^1—O—$ or

$R^{16}—X—NR^{15}—Q—$

wherein Q is a direct link or is alkylene or alkenylene each of up to 6 carbon atoms; wherein Q^1 is alkylene of up to 6 carbon atoms; wherein R^{15} is hydrogen or alkyl of up to 6 carbon atoms; and wherein R^{16} is hydrogen or alkenyl, cycloalkyl, hydroxyalkyl or alkoxyalkyl each of up to 6 carbon atoms, or alkyl, aryl, aralkyl or aralkenyl each of up to 10 carbon atoms;

and an acid-addition salt thereof.

9. A method for the treatment or prophylaxis of heart diseases and hypertension in a warm-blooded animal which comprises administering to said animal an effective amount of at least one compound claimed in claim **1**.

10. A method for producing coronary β-adrenergic blockade in a warm-blooded animal in need of such blockade which comprises administering to said animal an effective amount of at least one compound claimed in claim **1**.

4,260,633

PESTICIDAL ESTERS OF AMINO ACIDS

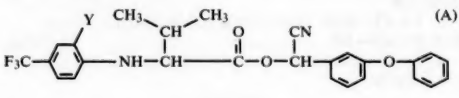
Richard J. Anderson, Palo Alto, Calif.; Karen G. Adams, West Chester, Ohio, and Clive A. Henrick, Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Filed Apr. 21, 1980, Ser. No. 142,522

Int. Cl.[3] **A01N** *37/34;* **C07C** *101/447, 121/78*

U.S. Cl. 424—304 **10 Claims**

1. A compound of the following formula A:



(A)

wherein,

Y is hydrogen or chloro; and

the acid is the R configuration and the alcohol is the S configuration or a mixture of the S configuration and the R configuration.

6. A method for controlling insects or acarids which comprises applying to said insect or acarid or their habitat a pesticidally effective amount of a compound of claim **1**.

4,260,634

ANTIMICROBIAL AGENTS

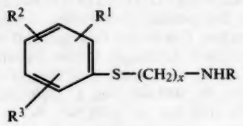
Herbert L. Wehrmeister, Terre Haute, Ind., assignor to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed Jun. 18, 1979, Ser. No. 49,694

Int. Cl.[3] **A01N** *33/02, 37/18*

U.S. Cl. 424—324 **2 Claims**

1. A method of controlling the growth of bacteria or fungi or both comprising applying to them an antimicrobial amount of a compound represented by the formula



where R is acetyl or propionyl; R^1, R^2 and R^3 are hydrogen, and x is 2 or 3.

4,260,635

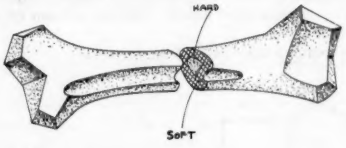
UNITIZED ANIMAL FOOD SYSTEM PRODUCT

Stanton E. Fisher, 16 W. Brentmoor Park, St. Louis, Mo. 63105

Continuation-in-part of Ser. No. 117,081, Feb. 19, 1971, abandoned, Ser. No. 221,035, Jan. 26, 1972, abandoned, and Ser. No. 242,428, Apr. 10, 1972, abandoned. This application Dec. 18, 1974, Ser. No. 534,064

Int. Cl.[3] **A23K** *1/00*

U.S. Cl. 426—3 **9 Claims**



1. A simultaneously compacted, shaped, molded, and unitized, self-contained, unit-integral, chew-resistant animal food system product containing at least one chew-resistant layer with animal food as a part thereof and at least one lesser chew-resistant layer with animal food as a part thereof, said latter layer being less chew-resistant than said former layer, the chew-resistance of each of said layers being primarily controlled by the relative presence or absence of structure-supporting fibers, said structure-supporting fibers being a mixture of animal safely digestible structure-supporting fibers and animal safely indigestible structure-supporting fibers, said structure-supporting fibers being present in said animal food system product in said latter layer and in said former second layer or in said latter layer or in said former layer in amounts or in an amount sufficient to make said animal food system product chew-resistant, self-contained and unit-integral and to enable it to be and remain in its compacted shaped and molded form.

4,260,636

PREPARATION OF A FERMENTED MILK DRINK

Mutsuo Yasumatsu; Kenji Katayama, both of Tokyo, and Koichi Sakamoto, Omura, all of Japan, assignors to The Calpis Food Industry Co., Ltd., Tokyo, Japan

Filed Feb. 22, 1978, Ser. No. 880,874

Claims priority, application Japan, Feb. 25, 1977, 52-19165

Int. Cl.[3] **A23C** *9/12*

U.S. Cl. 426—34 **6 Claims**

1. A method of producing fermented milk drink comprising dissolving milk protein in fermented milk to provide an L-value below 35 by subjecting fermented milk, having a non-fat milk solids content of 0.5–2.5% and a pH of 3.00–3.45, to heating at above 60° C.; and then forming milk protein particles to provide an L-value of 40–57 by adding a pH adjusting agent to provide a pH of 3.5–3.8 and heating at above 60° C.

4,260,637

SELF-STICKING BREAD CRUMB COMPOSITION AND PROCESS

Joseph M. Rispoli, Massapequa Park, and Janice R. Shaw, Yonkers, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Apr. 2, 1979, Ser. No. 25,957
Int. Cl.[3] A23L 1/216
U.S. Cl. 426—96 22 Claims

1. A dry, self-sticking bread crumb composition which adheres when coated onto a moistened comestible, comprising:

bread crumbs having a particle size wherein at least 50% by weight of the crumbs are retained on an 20 mesh U.S. Standard Screen after passing through a 5 mesh U.S. Standard Screen and wherein not more than 10% by weight of the crumbs are retained on a 5 mesh U.S. Standard Screen; and,

an amount of an adhesive effective to bind the crumbs to a moistened comestible, said adhesive containing a protein, said protein being present at a level of at least about 1% by weight of the crumbs, said adhesive having been applied to and adhering to the surface of said crumbs.

4,260,638

METHOD OF PEELING FRUITS AND VEGETABLES WITH CARBOXYLIC ACIDS

William G. Schultz; Harry J. Neumann, both of El Cerrito, and John E. Schade, Walnut Creek, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation of Ser. No. 714,229, Aug. 13, 1976, abandoned. This application Dec. 13, 1979, Ser. No. 103,253
Int. Cl.[3] A23L 1/212
U.S. Cl. 426—287 15 Claims

1. A process for preparing edible plant products to be peeled and peeling edible plant products, which consists essentially of

(a) contacting the unpeeled edible plant product with an aqueous dispersion containing a 2–18 carbon carboxylic acid as the sole pretreatment and peel-loosening agent in a concentration and for a period of time and at a temperature sufficient to loosen the peel, and

(b) mechanically removing the so-loosened peel.

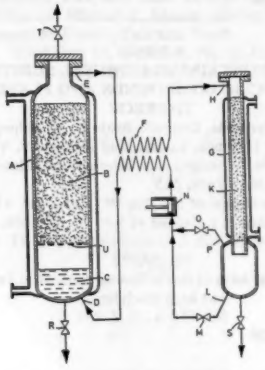
4,260,639

PROCESS FOR THE DECAFFEINATION OF COFFEE

Kurt Zosel, Oberhausen, Fed. Rep. of Germany, assignor to Studiengesellschaft Kohle MBH, Mulheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 110,428, Jan. 28, 1971, abandoned. This application May 25, 1973, Ser. No. 364,190
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1970, 20052931; Austria, Feb. 12, 1970, 61298/70
Int. Cl.[2] A23P 1/00
U.S. Cl. 426—478 14 Claims

1. A process for the decaffeination of raw coffee which comprises contacting the raw coffee with water-moist carbon dioxide above its critical temperature and critical pressure to effect removal of caffeine therefrom and recovering a substantially decaffeinated coffee, the amount of water in the carbon



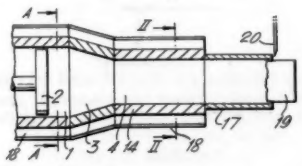
dioxide being sufficient to effectuate said removal of the caffeine from the coffee.

4,260,640

MOULDING FOOD PRODUCTS

Karl Hartmann, Bremerhaven; Klaus Bartels, Langen, and Erich Kraffert, Nieder-Olm, all of Fed. Rep. of Germany, assignors to Lever Brothers Company, New York, N.Y.

Continuation-in-part of Ser. No. 795,829, May 11, 1977, abandoned, which is a continuation of Ser. No. 701,911, Jul. 1, 1976, abandoned, which is a continuation of Ser. No. 593,152, Jul. 3, 1975, abandoned, which is a continuation of Ser. No. 281,870, Aug. 12, 1972, abandoned. This application Apr. 13, 1978, Ser. No. 895,826
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1971, 2142341; May 5, 1972, 2222205
Int. Cl.[2] A23L 3/36
U.S. Cl. 426—516 4 Claims



1. A process for shaping frozen food while substantially retaining the cellular and muscular structure thereof to form a final frozen food product comprising:

(a) loading said frozen food into a pressure chamber so that about 80% of the cross-sectional area of said chamber is completely occupied by said frozen food;

(b) forcing said frozen food, at a temperature below about −6° C., by a high pressure feeding means into the inlet end of a restrictive channel, said channel being resistant to high pressure, and having a cross-section which decreases from said inlet end to a discharge end in a ratio of 1.1 to 1 to 3 to 1 over a distance of 0.5 to 10 cm;

(c) extruding said frozen food through said restrictive channel and through a high pressure resistant shaping channel, at a pressure of about 100 to about 450 atmospheres (gauge) and sufficient to produce a back pressure of at least 100 atmospheres (gauge) in said shaping channel, said shaping channel being at least 6 cm long and having a relatively constant cross-section corresponding to the cross-sectional shape of said final product; and

(d) adjusting the temperature of said frozen food to maintain therein a temperature of −6° C. to −30° C. throughout said process.

4,260,641

MIXTURES CONTAINING ISOBUTYL SUBSTITUTED HETEROCYCLIC COMPOUNDS AND FLAVOR USE THEREOF

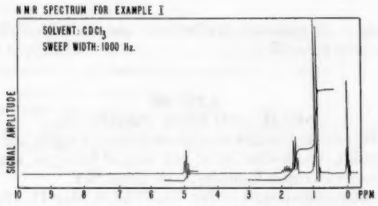
Donald A. Withycombe, Lincroft; Braja D. Mookherjee, Holmdel; Manfred H. Vock, Locust, and Joaquin F. Vinals, Red Bank, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 887,623, Mar. 17, 1978, abandoned, which is a division of Ser. No. 807,056, Jun. 16, 1977, Pat. No. 4,093,752. This application Aug. 17, 1979, Ser. No. 67,370

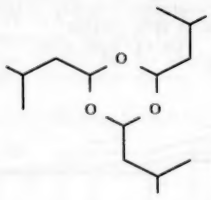
The portion of the term of this patent subsequent to Jun. 6, 1995, has been disclaimed.

Int. Cl.³ A23L *1/234*

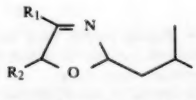
U.S. Cl. 426—536 **3 Claims**



1. A mixture containing 2,4,6-triisobutyl-1,3,5-trioxane having the formula:



and a mixture of oxazoline compounds having the generic structure:



wherein R_1 and R_2 are different and each is selected from the group consisting of ethyl and methyl, produced according to the process of admixing aqueous ammonia with isovaleraldehyde at a temperature in the range of from about 0° C. up to about 10° C., whereby the reaction of aqueous ammonia with isovaleraldehyde is carried out using a mole ratio of isovaleraldehyde: ammonia of from 0.5:1 up to 2:1 thereby producing an imine; then raising the temperature of the resulting reaction mass to 35° C. thereby dispersing the resulting imine; then while maintaining the reaction mass in the same reactor admixing the resulting reaction mass with 2-hydroxy-3-pentanone or 3-hydroxy-2-pentanone or a mixture thereof at a temperature in the range of from about 30° C. up to about 50° C. over a period of time of from 1 up to 10 hours whereby the reaction mass exists in two phases; an aqueous phase and an organic phase; extracting the aqueous phase with an inert solvent; combining the resulting extract with the organic phase; and evaporating the inert solvent from the organic phase.

4,260,642

PROCESS FOR MODIFYING STARCH WITH SODIUM OR CALCIUM STEAROYL-2-LACTYLATE

William A. Mitchell, Lincoln Park, N.J., and William C. Seidel, Monsey, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Nov. 13, 1978, Ser. No. 960,218

Int. Cl.³ A23L *1/195*

U.S. Cl. 426—579 **16 Claims**

1. A process for producing a dry pregelatinized starch suitable for use in instant puddings comprising:

forming an aqueous slurry containing an ungelatinized starch and a modifier chosen from the group consisting of sodium stearoyl-2-lactylate and calcium stearoyl-2-lactylate, the modifier being present at levels effective to uniformly swell the starch granules and minimize bursting and undercooking of the starch granules during gelatinization and to impart the resultant dry pregelatinized starch when rehydrated with a smoother, creamier mouthfeel and a higher sheen without appreciable loss of viscosity or body than a starch pregelatinized without said modifier;

heating the slurry to a temperature and for a period of time sufficient to gelatinize the starch and to obtain whole starch granules uniformly swelled while minimizing bursting and undercooking of the starch granules; and

drying the slurry.

4,260,643

TRIGLYCERIDE COMPOSITIONS

Walter M. Cochran, Highland Park, Ill., assignor to Bunge Edible Oil Corporation, Kankakee, Ill.

Filed Mar. 28, 1979, Ser. No. 24,722

Int. Cl.³ A23D *5/00*; A23L *1/20*; C11C *3/12*

U.S. Cl. 426—606 **16 Claims**

5. A process for preparing edible non-fractionated triglyceride compositions comprising subjecting a starting stock selected from the group consisting of cottonseed oil, palm oil, safflower oil, sunflower oil, corn oil, peanut oil, rapeseed oil, soybean oil, fish oils, marine oils and mixtures thereof to a first hydrogenation step in the presence of an active metal catalyst under selective conditions of low hydrogen pressure and high temperature until said starting stock exhibits an Iodine Value of from about 48–56 and contains greater than 40% saturated fatty acids by weight; and thereafter subjecting the triglyceride compositions obtained from said first selective hydrogenation to a second hydrogenation carried out in the presence of a sulfurated nickel catalyst and at a temperature of from about 340°–460° F. and under a hydrogen pressure of from about 1–50 psig, and continuing said second hydrogenation until said partially hydrogenated triglyceride composition contains 40–55% saturated fatty acids, 5–20% trisaturated glycerides, 30–40% trans acid, 14–20% cis acid, and exhibits a Wiley melting point of from 114°–127° F., an Iodine Value of from 43–52 and are characterized by a Solid Fat Index as follows: 65.2–76.2 at 50° F., 57.2–76.8 at 70° F., 53.0–76.9 at 80° F., 43.9–72.0 at 92° F. and 27.3–54.0 at 104° F.

4,260,644

PREPARATION OF FOOD FUNCTIONAL PROTEINS

Caj. E. A. Eriksson, Mölnlycke, and Svein Tjelle, Landvetter, both of Sweden, assignors to Svenska Institutet for Konserveringsforskning, Gothenberg, Sweden

Continuation of Ser. No. 821,304, Aug. 2, 1977, abandoned, which is a continuation of Ser. No. 640,549, Dec. 15, 1975, abandoned, which is a continuation-in-part of Ser. No. 394,869, Sep. 6, 1973, abandoned. This application May 15, 1979, Ser. No. 39,655

Claims priority, application Sweden, Sep. 8, 1972, 11601/72

Int. Cl.[3] A23J *3/00*

U.S. Cl. 426—656 2 Claims

1. A process for preparing a food-functional texturized protein in solid shapes that can withstand mechanical force, comprising a first step of dispersing undenatured proteinaceous starting material in a water solution of a protein dispersing agent solely selected from the class consisting of carbamide and guanidine hydrochloride and under mild conditions comprising a pH range of about 4–7 and a temperature not exceeding about 65° C., thereby forming a dispersion in the water of dispersed protein having a preformation of texture sites, a second step of separating said agent from said dispersed protein at temperatures not exceeding 65° C., thereby forming a precipitate of water-containing protein having a gel formation retaining said texture sites and inherently capable of texturizing by freezing or drying, a third step of separating said gel formation from excess water, and a fourth step of texturizing said gel formation by freezing or drying to form said food-functional texturized protein.

4,260,645

LATENT FINGERPRINT DETECTION

F. Michael Kerr, Ottawa, and Alan D. Westland, Chelsea, both of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Filed Jan. 2, 1979, Ser. No. 508

Int. Cl.[3] B41M *5/00;* C09K *3/30, 3/00;* G01N *33/16*

U.S. Cl. 427—1 11 Claims

1. A method for detection and visualization of latent fingerprints where the use of aqueous media is detrimental, comprising

(i) uniformly contacting the latent print area of the substrate with a non-aqueous solution comprising

(a) a volatile organic solvent with unsaturation present, and

(b) a silver salt soluble in said solvent, sufficient silver ions being present to visualize a latent print, the silver salt being selected from silver perchlorate, silver hexafluoroantimonate, silver hexafluorophosphate, silver tetrafluoroborate, silver trifluoroacetate, and mixtures thereof;

(ii) evaporating the solvent, allowing reaction of silver ion with fingerprint material to proceed and photo-actinic effects to occur leading to visualization of the fingerprint, and

(iii) preserving or recording the fingerprint outline.

9. A sprayable non-aqueous solution dispersed in an aerosol propellant under pressure, the solution being suitable for application to latent fingerprints for detection and visualization thereof, said solution comprising:

(a) a volatile organic solvent with unsaturation present; and

(b) a silver salt soluble in solvent (a) and selected from the group consisting of silver perchlorate, silver hexafluorophosphate, silver hexafluoroantimonate, silver tetrafluoroborate, silver trifluoroacetate and mixtures thereof.

4,260,646

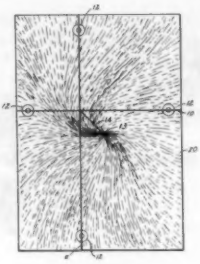
METHOD FOR IDENTIFICATION OF ANIMALS

Beverly P. Farrell, P.O. Box 2250, College Station, Pullman, Wash. 99163, and Michael E. Mucha, Albion, Wash., assignors to Beverly P. Farrell, Pullman, Wash.

Filed Oct. 19, 1979, Ser. No. 86,592

Int. Cl.[3] A61B *5/10*

U.S. Cl. 427—1 13 Claims



1. A method of recording identifying features of an animal bearing a trichoglyph area adjacent externally recognizable anatomical features, comprising the following steps:

applying to the surface of the trichoglyph are a liquid solvent material that is non-injurious to the animal, to wet the hair contained therein;

pressing a solvent-soluble surface of a sheet of flexible material against the wetted hair in the trichoglyph area over a period of time adequate to enable the solvent to soften the surface of the sheet and make an impression thereon;

marking the sheet about said surface to indicate its position relative to externally recognizable anatomical features of the animal located adjacent to the trichoglyph area;

moving the sheet of flexible material from contact with the animal; and

permitting the solvent-soluble surface of the sheet of flexible material to dry.

4,260,647

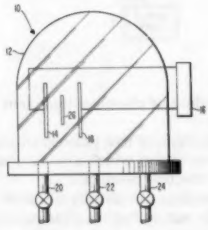
METHOD OF DEPOSITING AN ABRASIVE LAYER

Chih C. Wang, Hightstown, and Ronald F. Bates, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 13, 1979, Ser. No. 48,161

Int. Cl.[3] B05D *3/06*

U.S. Cl. 427—40 8 Claims



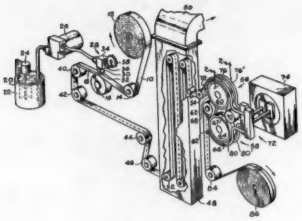
1. In a method for depositing a thick, amorphous, continuous layer of SiO_x onto a substrate which comprises depositing a series of thin layers by glow discharge of an organosilane and oxygen, interrupting the deposition as required, the improvement which comprises initiating the glow discharge in oxygen after each interruption and prior to a subsequent deposition.

4,260,648

METHOD FOR FORMING MAGNETIC RECORDING REGIONS ON PHOTOGRAPHIC ELEMENTS

Walter W. Jacobe, Rochester, and Gary K. Bien, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 9, 1979, Ser. No. 37,585
Int. Cl.³ B05D *3/02*
U.S. Cl. 427—45.1 **13 Claims**



1. A method for forming a magnetic recording region on a photographic element, which comprises:

(1) applying to said element in a predetermined form a dispersion of finely-divided magnetic particles in a liquid medium, and

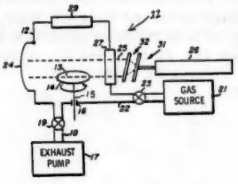
(2) bringing said element into contact with a surface of an induction-heating apparatus to solidify said dispersion by transfer of heat thereto, said apparatus comprising a cylindrical roller which is mounted for rotation about its axis and whose cylindrical surface engages said element, said roller being heated by induction only within a rim portion thereof so as to generate heat adjacent to said cylindrical surface for transfer to said element.

4,260,649

LASER INDUCED DISSOCIATIVE CHEMICAL GAS PHASE PROCESSING OF WORKPIECES

Dean R. Dension, Los Gatos, and Larry D. Hartsough, Berkeley, both of Calif., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed May 7, 1979, Ser. No. 36,828
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—53.1 **16 Claims**



1. In the method of chemical treatment of workpieces, the steps of:

exposing a workpiece to a gaseous atmosphere containing a gaseous constituent which is to be dissociated to produce a gaseous reactive product;

directing a high power density beam of laser radiation into the gaseous atmosphere in close proximity to a surface of the workpiece to be treated, but spaced a finite distance therefrom, to dissociate the gaseous constituent to produce the gaseous reactive product; and

reacting the gaseous reactant product with said surface of the workpiece for processing of the workpiece.

10. In an apparatus for chemical treatment of workpieces:

work station means for exposing a workpiece to a controlled gaseous atmosphere containing a gaseous constituent which is to be dissociated to produce a gaseous reactant product for reaction with a surface of the workpiece for chemical processing of the workpiece; and

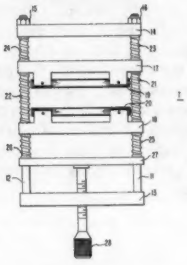
means for directing a high power density beam of laser radiation into said controlled gaseous atmosphere in close proximity to said surface, but spaced a finite distance therefrom, to dissociate said gaseous constituent to produce said gaseous reactant product.

4,260,650

METERING DIE

Norman G. Haderer, Bristol, and Robert D. Harris, Saltville, both of Va., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 25, 1978, Ser. No. 954,384
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—54.1 **16 Claims**



1. An improved metering die comprising

(1) two parallel rigid supports;

(2) two parallel metering pins at least one of which is slidably mounted across said two parallel rigid support;

(3) resilient means forcing said slidably mounted metering pin to move towards the other;

(4) resilient means forcing said slidably mounted metering pin to move away from the other; and

(5) means for adjusting the degree of force exerted by said resilent means.

4,260,651

PHOSPHATE-FREE CONCENTRATED PARTICULATE HEAVY DUTY LAUNDRY DETERGENT

Harold E. Wixon, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 2, 1976, Ser. No. 747,002
Int. Cl.³ C02B *1/44*; C11D *3/10, 3/12, 11/00*
U.S. Cl. 427—214 **9 Claims**

1. A method of making a free-flowing particulate heavy duty laundry detergent having a bulk density of at least about 0.6 gm/c.c. comprising mixing together from about 20 to 40% of a mixture of sodium carbonate and sodium bicarbonate particles in a weight ratio in the range of from about 1:10 to 10:1, with from about 10 to 30% by weight of a nonionic detergent so that said nonionic detergent is absorbed by and coats the particles, and admixing with said nonionic detergent coated particles from about 40 to 60% by weight of zeolite particles such that said zeolite particles adhere to the detergent on the surfaces of the particles to provide a first formed particle; and applying a second coating of nonionic detergent to said first formed particle and then applying to said second nonionic detergent coating a coating of zeolite particles to render said particle free flowing; wherein the ratio of said second nonionic deterent coating to zeolite particles post-applied to said first formed particle is in the range of from about 1:6 to about 3:4, said zeolite being a crystalline zeolite, amorphous zeolite or a mixture of crystalline and amorphous zeolites wherein the

exchange rate and capacity of said zeolite is such that when about 375 ppm of said zeolite on an anhydrous basis is placed in water at 45° C. containing about 40 ppm of dissolved calcium ion while vigorously stirring the dissolved calcium ion content of the water is reduced to below about 8 ppm in about 5 minutes, said zeolite particles having ultimate particle diameters in the range of from about 0.01 to 20 microns; said nonionic detergent being a fatty-alcohol polyethylene oxide condensate which is a 10 to 18 carbon atom higher fatty alcohol alkoxylated with about 3 to 15 moles of ethylene oxide per mole of the higher fatty alcohol.

4,260,652

PREPARATION OF PERMSELECTIVE COMPOSITE MEMBRANE

Yutaka Taketani; Yuzuru Hayashi; Takeyuki Kawaguchi; Tomoyoshi Ono, and Ko Mori, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Jun. 5, 1978, Ser. No. 912,547

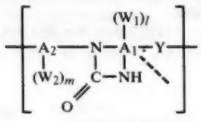
Claims priority, application Japan, Jun. 8, 1977, 52/66601; Jun. 10, 1977, 52/67847

Int. Cl.[3] **B05D** *5/00;* **C08J** *9/26;* **C08L** *79/04*

U.S. Cl. 427—245 **29 Claims**

1. A process for producing a permselective composite membrane, which comprises

(1) dissolving an imidazolone ring-containing aromatic polymer in an aqueous liquid medium containing a water-miscible amine having a pka of more than 5.0 in a concentration of at least 5% by weight to form a solution containing the polymer in a concentration of 0.01 to 20.0% by weight, said polymer comprising at least 30 mole %, based on the entire recurring units, of at least one recurring unit of the following formula

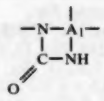


(I)

wherein A_1 represents an aromatic group having a valence of (3+l), the dashed line represents the presence or absence of a bond, and the two nitrogen atoms and W_1 are all bonded to the nuclear carbon atoms of the aromatic group A_1; A_2 represents an aromatic group having a valence of (2+m); Y is —O— or

in which R_1 is a hydrogen atom or a monovalent hydrocarbon residue; and the two nitrogen atoms bonded to A_1 are bonded to the ring carbon atoms at the orthoposition of the aromatic group A_1; l and m are identical or different and each represent an integer of 0 to 3; when Y is

and one of W_1 groups is bonded to the ring carbon atom at the ortho-position of the aromatic group A_1 together with Y, the W_1, Y and A_1 can form a 5-membered ring same as



in which all symbols are the same as defined above; and when W_1 does not form the 5-membered ring, W_1 and W_2 are identical or different and represent at least one group selected from substituted nitrogen-containing groups derived from a primary amino group;

(2) coating the resulting polymer solution on a microporous substrate, and

(3) drying the coating to form an ultrathin film of the polymer on the microporous substrate.

4,260,653

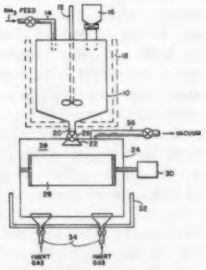
SUPPORTS AND PREPARATION PROCESS FOR THE MANUFACTURE OF A CALCIUM CHEMICAL PUMP FOR HF/DF LASER

Pasquale Martignoni; James A. Murfree, both of Huntsville; Henry A. Nappier, Laceys Spring; Orval E. Ayers, Huntsville, all of Ala., and William M. Chew, Yorba Linda, Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 22, 1979, Ser. No. 87,116

Int. Cl.[3] **B05D** *3/00, 1/02*

U.S. Cl. 427—247 **4 Claims**



1. A process for producing an improved calcium chemical pump, comprising reacting calcium and anhydrous ammonia in an evacuated vessel that is cooled to a temperature between 0° C. and −30° C. to form a solution of the calcium and anhydrous ammonia, spraying said solution onto a porous foamed substrate material that is being rotated in a closed container that is being maintained at about room temperature, and maintaining a vacuum in said closed container as said solution is being sprayed into said closed container and onto said substrate material to cause ammonia to be drawn off by said vacuum and calcium to be deposited throughout the porous foamed substrate material as said substrate material is being rotated.

4,260,654
SMOOTH COATING

Alfonso L. Baldi, Wynnewood, Pa., assignor to Alloy Surfaces Company, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 752,855, Dec. 21, 1976, Pat. No. 4,208,453, Ser. No. 809,189, Jun. 23, 1977, Ser. No. 851,504, Nov. 14, 1977, Ser. No. 963,313, Nov. 27, 1978, and Ser. No. 953,762, Oct. 23, 1978, each is a continuation-in-part of Ser. No. 614,834, Sep. 19, 1975, Pat. No. 4,140,760, said Ser. No. 752,855, Ser. No. 809,189, and Ser. No. 851,504, is a continuation-in-part of Ser. No. 694,951, Jun. 11, 1976, abandoned, said Ser. No. 614,834, is a continuation-in-part of Ser. No. 446,473, Feb. 27, 1974, Pat. No. 3,958,046. This application Sep. 7, 1979, Ser. No. 73,539

Int. Cl.[3] C23C *9/02*

U.S. Cl. 427—253 6 Claims

1. In the diffusion aluminizing of an age-hardenable stainless steel at a temperature below 1200° F., the improvement according to which roughening of the aluminized surface is reduced by applying to the stainless steel surface, before the aluminizing, an adherent layer of nickel or cobalt not over about 0.1 mil thick.

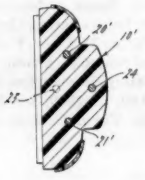
4,260,655
PROTECTIVE AND DECORATIVE MOLDING CONSTRUCTION

Robert A. Zoller, Bay Village, Ohio, assignor to The Standard Products Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 790,532, Apr. 25, 1977, abandoned. This application Oct. 30, 1978, Ser. No. 955,595

Int. Cl.[3] B60R *13/02, 13/04;* B32B *15/02*

U.S. Cl. 428—31 7 Claims



1. A bendable molding including an elongated plastic body formed of a material which when bent tends to return to its initial shape and having embedded therein a pair of spaced parallel metallic wires extending lengthwise therein and confined against lateral movement in the body, means for securing said wires against longitudinal displacement with relation to the body, the wires being formed of a material having a modulus of elasticity low enough to be capable of being stretched beyond the elastic limit thereof without fracturing when the body is bent in the common plane of said wires, and being secured against longitudinal displacement firmly enough so that when the body is so bent, a radially outer wire is elongated with relation to a radially inner wire and said wires thereafter oppose return of the molding to its pre-bent shape, having a substantially planar bottom surface adapted to be secured to a supporting surface in contact therewith, the wires being substantially equidistant from said bottom surface and spaced from each other a distance which is a substantial proportion of the width of the molding, having a third wire in and also similarly confined and similarly secured with respect to the body and parallel to the wires of said pair but spaced from the common plane occupied by the wires of said pair, said third wire being formed of a material capable of being stretched beyond its elastic limit without fracturing when the body is bent in a plane which is at an angle to said common plane, said plastic body being extruded around the wires and the means for securing the wires comprising an adhesive which is applied to said wires prior to the extrusion of the plastic body thereabout.

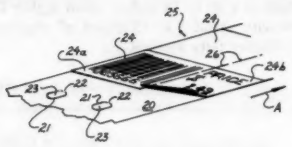
4,260,656
PIN-FEED LABEL STOCK FOR DRIVE TRANSPORT SYSTEMS AND METHOD OF FORMING SAME

James W. Mullen, Walnut Creek, Calif., assignor to VIDAC, Concord, Calif.

Filed Sep. 11, 1978, Ser. No. 941,027

Int. Cl.[3] B32B *3/10, 3/16, 31/18*

U.S. Cl. 428—42 18 Claims



1. A paper stock with a plurality of individual adhesive labels on a supporting backing strip for use with pin-type drives in paper transport systems and backing strip comprising a longitudinal paper-like strip having at least one aligned row of spaced-apart pin-engageable drive apertures, each drive aperture having a displaceable blank closing it, and each drive aperture formed by a continuous circular die cut line having a gap between its converging ends with said gap connecting the resulting blank at its leading edge with said strip, each of said continuous circular die cut lines substantially severing its resulting blank from said strip in its drive aperture except in the area of said gap operable to prevent tearing of said backing strip should any blank fail to properly release from its associates adhesive label when the latter peels from said backing strip and operable to allow said blank to be easily displaced, whereby displacement of said blank in said aperture will cause it to hinge along the gap.

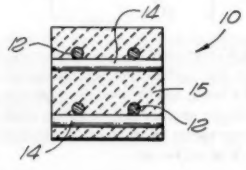
4,260,657
REINFORCED CERAMIC STRUCTURE

Morris S. Loyd, Northridge, and Michael S. O'Neill, Tustin, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 2, 1977, Ser. No. 856,880

Int. Cl.[3] B32B *5/12*

U.S. Cl. 428—113 8 Claims



3. A reinforced ceramic structure comprising:

a casting of hydrosetting ceramic material; and

a plurality of reinforcing members embedded in said casting, said reinforcing members being of a material having substantially the same thermal expansion rate as said ceramic material, said reinforcing member being adhesively bonded to said casting, said reinforcing members being formed from unidirectional graphite fibers in an organic matrix, said fibers being adhesively bonded together, said strands being adhesively bonded together, a first portion of said reinforcing members being aligned in said casting in a direction to oppose tensile stress on said casting, said first portion of said reinforcing members being spaced from one another, and a second portion of said reinforcing members being embedded in said casting transverse and adjacent to said first portion of said reinforcing members, said second portion of said reinforcing members being

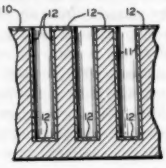
spaced from one another, said reinforcing members being adhesively bonded to said casting by said organic matrix.

4,260,658

EROSION RESISTANT SURFACE

John W. Erickson, Huntington Beach, Calif., assignor to Kobe, Inc., City of Commerce, Calif.

Filed Jun. 21, 1979, Ser. No. 50,920
Int. Cl.³ B32B *15/05, 3/30*
U.S. Cl. 428—163 **5 Claims**



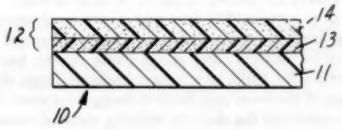
1. In a fluid handing system for moving fluids containing abrasive particulates at high velocity and having a surface contacted by such fluid, the improvement comprising: a plurality of closely spaced depressions in said surface, the walls of said depressions being normal to the surface, each said depression having a depth substantially in excess of its width, and a coating of erosion resistant material bonded to the remaining portions of said surface and to all surfaces of said depressions, whereby the erosion of said coating from said surface creates a multitude of closely spaced columns having unprotected outer surfaces and side walls of erosion resistant material.

4,260,659

PRESSURE-SENSITIVE TAPE HAVING A PLURALITY OF ADHESIVE LAYERS

Ramsis Gobran, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 897,852, Apr. 19, 1978, abandoned. This application Jun. 18, 1979, Ser. No. 49,415
Int. Cl.³ C09J *7/02;* B32B *7/02, 25/00, 27/30*
U.S. Cl. 428—217 **8 Claims**



1. In a normally tacky and pressure-sensitive adhesive tape of the type wherein a layer of normally tacky and pressure-sensitive adhesive is coated over and adhered to a flexible sheet material,

the improvement wherein the pressure-sensitive adhesive layer comprises a plurality of superposed and firmly united adhesive strata selected from the same general class of adhesives, each having a thickness of about 15 to 60 micrometers, the thickness of said layer being 40–120 micrometers if only two strata are present and 60–180 micrometers if three strata are present, the exposed adhesive stratum having a 10-second shear creep compliance of at least about 5×10^{-6} cm^2/dyne and the immediately underlying adhesive stratum having a 10-second shear creep compliance of not more than about 2×10^{-6} cm^2/dyne,

whereby the tape has a quick stick value of at least about 100 grams per centimeter width, a shear adhesion value of at least 3 minutes, and a contamination tolerance of at least about 15 grams per centimeter width.

4,260,660

USE OF SULPHUR AS AN ADDITIVE TO INHIBIT THE SMOLDERING COMBUSTION OF MATERIALS

Robert J. McCarter, Gaithersburg, Md., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Continuation-in-part of Ser. No. 788,951, Apr. 19, 1977, abandoned. This application Mar. 14, 1978, Ser. No. 886,384
Int. Cl.² A47C *27/00*
U.S. Cl. 428—284 **15 Claims**

1. A composite upholstered furniture or mattress assembly comprising layers of material wherein the inside surface of the outermost, normally smolder-prone layer is in intimate contact with a fabric layer containing sulphur in an amount effective to render said assembly smolder resistant.

4,260,661

POLYOLEFIN COMPOUNDS HAVING IMPROVED HEAT CURING STABILITY, METHOD OF IMPROVING HEAT AGING STABILITY THEREIN, AN ELECTRICAL CONDUCTOR INSULATED THEREWITH AND METHOD OF FORMING

Robert B. Walters, Oxford, and Edward V. Wilkus, Trumbull, both of Conn., assignors to General Electric Company, New York, N.Y.

Continuation-in-part of Ser. No. 965,716, Dec. 1, 1978, abandoned. This application Jan. 23, 1980, Ser. No. 114,486
Int. Cl.³ B32B *15/04*
U.S. Cl. 428—389 **10 Claims**

7. An electrical conductor insulated with a cured ethylene-containing polymer compound having improved and lasting heat aging stability, said insulation comprising in approximate relative parts by weight, the crosslink cured product of:

Ethylene-containing polymer	100.0
Sterically hindered di-tertiary butyl phenyl	1–6
At least one zinc salt of a mercaptoimidazole selected from the group consisting of 2-mercaptobenzimidazole and 2-mercaptotolyl-imidazole	1–12
Zinc stearate	1–6
Halogen-containing organic compound	0–70
Antimony oxide	0–35
Peroxide crosslink curing agent	2–6

4,260,662
ENAMELED PARTS MADE OF HEAT-RESISTANT METALS

Josef Wratil, Bergisch-Gladbach, Fed. Rep. of Germany, assignor to Reimbold & Strick GmbH & Co KG, Köln-Kalk, Fed. Rep. of Germany

Filed Jul. 9, 1979, Ser. No. 55,846

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1978, 2829993; Jul. 7, 1978, 2829959

Int. Cl.[3] **B32B** *15/04, 17/06;* **C03C** *7/02, 7/04*

U.S. Cl. 428—433 **1 Claim**

1. A muffler for an internal combustion engine enameled with a fired composition of the following approximate analysis in parts by weight:

aluminum powder	40
silicon powder	5
chromium trioxide	5
zirconium silicate	5
copper oxide	2
bentonite	1
water	75
frit	40

said frit having the following approximate analysis in percent by weight:

Alumina	Al_2O_3	10
Boron trioxide	B_2O_3	50
Sodium monoxide	Na_2O	11
Lead monoxide	PbO	5
Calcium oxide	CaO	9
Barium oxide	BaO	10
Manganese oxide	MnO	4
Cobalt oxide	CoO	1

4,260,663
METHOD OF PRODUCING A DIELECTRIC HAVING A PEROWSKITE STRUCTURE

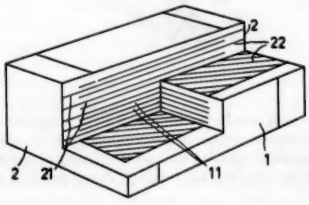
Hans J. Hagemann, and Siegfried Hunten, both of Aachen, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 4, 1979, Ser. No. 45,554

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1978, 2824870

Int. Cl.[3] **H01B** *3/12;* **H01G** *4/12;* **B32B** *15/04;* **H01G** *4/20*

U.S. Cl. 428—472 **11 Claims**



1. A method of producing a dielectric having a perowskite structure, starting from alkaline earth zirconates, wherein up to 10 mole % of the zirconium may have been replaced by titanium, characterized in that a metal of the iron group or manganese were added in the form of their carbonates or oxides as doping agent to the stoichiometrical perowskite basic compound having a composition of $E(Zr_{1-x}Ti_x)O_3$, where $O<x\leqq 0.07$, and that the whole assembly is sintered in a reducing atmosphere to obtain a dense structure.

4,260,664
TRANSFER ELEMENTS AND PROCESS

George P. Dapp, and Michael A. Scott, both of Huntington, N.Y., assignors to Columbia Ribbon & Carbon Mfg. Co., Inc., Plainview, N.Y.

Filed Nov. 27, 1978, Ser. No. 964,029

Int. Cl.[3] **B41J** *31/00, 31/04;* **B41M** *5/02*

U.S. Cl. 428—476.9 **10 Claims**

1. Pressure-sensitive transfer element of the complete release type comprising a thin flexible polyolefin film foundation having thereon a thin, dry, hard, pressure-transferable imaging layer comprising 1.0 part by weight of a normally-hard synthetic resinous binder material, from about 0.5 part to 1.5 parts by weight of a non-hydroxylated fatty acid oil plasticizer for said binder material which is not a strong penetrant for said polyolefin film, from about 0.005 part to 0.15 part by weight of a metal salt of a C_{10} to C_{30} fatty acid which is a gelling agent for said oil and solidifies said oil plasticizer within said resinous binder material to prevent said oil from migrating therefrom, and an amount of coloring matter.

4,260,665
ELECTRON TUBE CATHODE AND METHOD FOR PRODUCING THE SAME

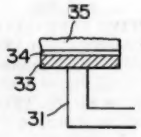
Toshiyuki Aida; Sadanori Taguchi, both of Tokyo; Isamu Yuito, Ome; Ushio Kawabe, Hamuramachi; Shigehiko Yamamoto, Tokorozawa; Yukio Honda, Fuchu; Norio Shibata, Honmacki, and Hiroshi Okano, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 27, 1978, Ser. No. 946,194

Claims priority, application Japan, Sep. 30, 1977, 52-116842

Int. Cl.[3] **H01J** *1/14*

U.S. Cl. 428—633 **11 Claims**



1. An electron tube cathode comprising a base metal of Ni-based alloy containing tungsten in solid solution approximately up to its solubility limit and a very small amount of a reducing impurity, and an electron emitting material coating consisting of alkaline earth metal oxide on the base metal, characterized by a film of a material selected from the group consisting of platinum and rhenium being interposed between the base metal and the electron emitting material coating, said film having a thickness sufficient to prevent peeling of the electron emitting material coating, due to a tungsten interface layer being formed between the electron emitting material coating and said base metal, yet still permitting diffusion of the reducing impurity during operation of said tube cathode, said base metal having a grain size of 4–10 μm.

4,260,666
BRAZED METAL ARTICLES

Nicholas J. DeCristofaro, Chatham; Samuel Levinson, N. Brunswick, both of N.J., and Peter Sexton, Weston, Conn., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jun. 18, 1979, Ser. No. 50,006

Int. Cl.[3] **B32B** *15/00*

U.S. Cl. 428—668 **5 Claims**

5. A brazed metal article, said article having been brazed with a filler metal in the form of a homogeneous ductile cobalt based brazing foil composed of metastable material having at

least 50 percent glassy structure, said foil having a thickness ranging from about 20 μm to 90 μm.

4,260,667

THERMAL BATTERY CELLS UTILIZING MOLTEN NITRATES AS THE ELECTROLYTE AND OXIDIZER

Melvin H. Miles, and Aaron N. Fletcher, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 7, 1980, Ser. No. 110,076
Int. Cl.[3] H01M *6/36*
U.S. Cl. 429—112 3 Claims

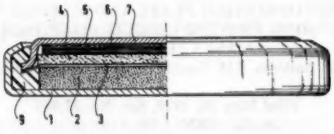
1. In a thermal battery cell comprising an electrolyte consisting of potassium, lithium, nitrate and halide ions, a cathode immersed in said electrolyte, a calcium anode immersed in said electrolyte and a heat source in thermal contact with said electrolyte for supplying thermal energy thereto, the improvement residing in utilizing an electrolyte having mole percentages of said potassium, lithium, nitrate and halide ions such that the electrolyte will begin melting at about 160° C. but still contain undissolved crystals at 360° C.

4,260,668

POSITIVE ACTIVE MATERIAL FOR AN ELECTRIC CELL WITH A NON-AQUEOUS ELECTROLYTE

André Lecerf, Pace', and Thérèse Caillaud, Neuville de Poitou, both of France, assignors to SAFT Leclanche, Poitiers, France

Filed Feb. 5, 1980, Ser. No. 118,760
Claims priority, application France, Feb. 16, 1979, 79 04013
Int. Cl.[3] H01M *4/02, 6/16*
U.S. Cl. 429—194 6 Claims



1. A positive active material of an electric cell with a non-aqueous electrolyte constituted by an oxyphosphate whose formula is $Cu_nO_p(PO_4)_2$, where n is an integer greater than 3 and lower than or equal to 6 and p is equal to n-3.

4,260,669

ALKALINE-MnO_2 CELL HAVING A ZINC POWDER-GEL ANODE CONTAINING STARCH GRAFT COPOLYMER

Catherine A. Kerg, Lakewood, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 14, 1980, Ser. No. 130,368
Int. Cl.[3] H01M *4/60*
U.S. Cl. 429—215 12 Claims

1. A powder-gel anode comprising a major portion of a consumable zinc anodic material, a minor amount of a starch-graft copolymer in which the copolymer contains carboxylate units, and an aqueous alkaline electrolyte solution.

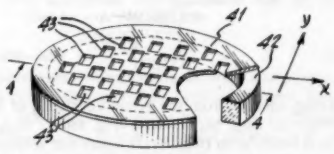
8. An alkaline-MnO_2 cell employing an aqueous alkaline electrolyte solution and a powder-gel anode comprising a major portion of a consumable zinc anodic material, a minor amount of a starch graft copolymer in which the copolymer contains carboxylate units, and an aqueous electrolyte solution.

4,260,670

X-RAY MASK

John A. Burns, New Hope, Pa., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Jul. 12, 1979, Ser. No. 57,065
Int. Cl.[3] F24F *13/00;* G21F *3/02;* G21K *3/00;* G02B *5/00*
U.S. Cl. 430—5 4 Claims



1. An X-ray mask, comprising:

an X-ray opaque substrate stabilizer having a plurality of apertures therethrough arranged in a checkerboard fashion; and

a mask substrate, transparent to X-ray radiation having X-ray absorptive patterns thereon, in intimate contact with the stabilizer with the patterns aligned with the apertures.

4,260,671

POLYCARBONATE OVERCOATS AND BINDERS FOR PHOTOCONDUCTIVE LAYERS AND ELEMENTS

Stewart H. Merrill, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 9, 1979, Ser. No. 92,887
Int. Cl.[3] G03G *5/14, 5/04, 5/05*
U.S. Cl. 430—67 37 Claims

1. A photoconductive layer comprising a photoconductor and a polycarbonate binder having pendant polar groups attached to from about 1 to 100 percent of the recurring units of said polycarbonate.

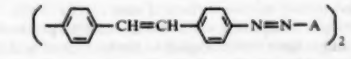
4,260,672

ELECTROPHOTOGRAPHIC SENSITIVE ELEMENT HAVING A PHOTOCONDUCTIVE DISAZO PIGMENT

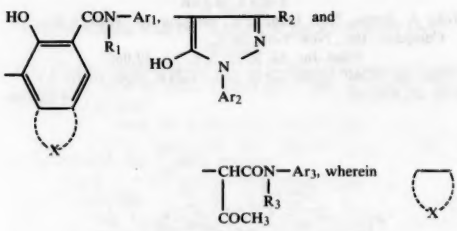
Masaomi Sasaki, Kawasaki; Kiyoshi Sakai, Tokyo; Mitsuru Hashimoto, Hino; Masafumi Ohta, Yokohama, and Kyoji Tsutsui, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 7, 1978, Ser. No. 922,526
Claims priority, application Japan, Jul. 8, 1977, 52/81790
Int. Cl.[3] G03G *5/06*
U.S. Cl. 430—72 16 Claims

1. An electrophotographic material having a high sensitivity as well as a high flexibility, which comprises an electrically conductive support and a photosensitive layer formed thereon, said photosensitive layer consisting essentially of fine particles of disazo pigment having the formula



wherein A is selected from the group consisting of



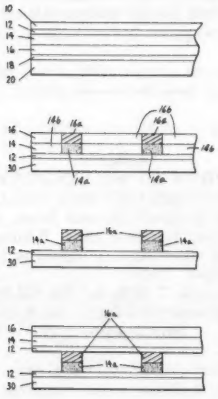
is a fused ring selected from the group consisting of benzene ring, halobenzene ring, naphthalene ring, indole ring, carbazole ring and benzofuran ring; Ar_1 is a member selected from the group consisting of phenyl, methylphenyl, methoxyphenyl, chlorophenyl, nitrophenyl, ethoxyphenyl, methylchlorophenyl, dimethylphenyl, methoxychlorophenyl, methoxybromophenyl, methoxymethylphenyl, dimethoxyphenyl, dimethoxychlorophenyl, dimethylaminophenyl, cyanophenyl, carboxyphenyl, benzenesulfonic acid sodium salt, tert-butoxyphenyl, naphthyl, methoxydibenzofuryl and carbazolyl; each of Ar_2 and Ar_3 is a member selected from the group consisting of phenyl, naphthyl, methoxyphenyl, methylphenyl, acetylaminophenyl, dimethylaminophenyl, cyanophenyl, nitrophenyl, dinitrophenyl, chlorophenyl, trichlorobenzenesulfonic acid, benzenesulfonic acid and benzenesulfonamide; each of R_1 and R_3 is a member selected from the group consisting of hydrogen, methyl, ethyl, phenyl and chlorophenyl; and R_2 is a member selected from the group consisting of methyl, carboxyl and $—COOC_2H_5$; and a resinous binder.

4,260,673

SINGLE SHEET COLOR PROOFING SYSTEM

Roger I. Krech, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 5, 1979, Ser. No. 72,634
Int. Cl.³ G03C *1/52*
U.S. Cl. 430—143 **5 Claims**



1. A presensitized color proofing sheet comprising
a carrier sheet having a smooth release surface;
a color coating of a diazo oxide and a pigmented resin compound in clinging engagement with but not adhesively bonded to said release surface of said carrier sheet;
a binder layer comprising a mixture or reaction product of a resin and a diazo oxide bonded to the surface of said color coating; said binder layer being free of color pigment; and said color coating and said binder layer being solubilizable in a solvent developing medium upon exposure to actinic radiation but not solubilizable in the developing medium prior to exposure to actinic radiation; and
a clear barrier layer firmly attached to said binder layer, said barrier layer being insoluble in said solvent development medium.

4,260,674

SILVER SALT PHOTOGRAPHIC MATERIAL FOR THE PRODUCTION OF SILVER AND BUBBLE PHOTOGRAPHIC IMAGES WITH 80% TRANSPARENCY

Edith Weyde, Kuerten; Anita von König, Krefeld, and Werner Liebe, Leverkusen, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 862,628, Dec. 20, 1977, abandoned, which is a continuation-in-part of Ser. No. 568,603, Apr. 10, 1975, Pat. No. 4,065,312. This application Dec. 14, 1979, Ser. No. 103,442

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1974, 2418977

Int. Cl.³ G03C *1/02, 1/06*
U.S. Cl. 430—271 **20 Claims**

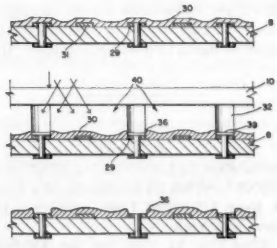
1. A photographic material for the production of photographic images for imagewise exposure comprising a selfsupporting or supported light-sensitive layer containing a light-sensitive silver salt emulsion having a thickness of from 5 to 15 μm and having the silver salt in an amount of from 1 to 500 mg/m^2 and cast from an emulsion having silver salt with a 1 to 50 mol % excess of silver ions and a pAg value below the equivalence point, capable of forming on exposure image nuclei of silver in catalytic amounts that cause development of an image of fine bubbles when the exposed layer is treated with a peroxide compound in a dry state, the silver grains of said silver salt having a grain size of less than 0.3 μm and the transparency of the layer being at least 80%.

4,260,675

PHOTOPRINTING PLATE AND METHOD OF PREPARING PRINTED CIRCUIT BOARD SOLDER MASKS THEREWITH

Donald F. Sullivan, 115 Cambridge Rd., King of Prussia, Pa. 19406

Filed May 10, 1979, Ser. No. 37,949
Int. Cl.³ G03C *5/00, 5/06, 5/04*
U.S. Cl. 430—315 **7 Claims**



1. The method of photoprinting a pattern upon the surface of an object having thereon a paste-like layer of photo sensitive material, comprising the steps of:
providing a photo pattern constituting a transparent body generally mating with said surface and disposing the pattern thereon in the form of opaque members extending from the transparent body in relief pattern far enough to contact the photo sensitive material on the surface of the object while leaving a gap between the surface and the transparent body elsewhere,
contacting the photo sensitive layer with only the opaque

members and extruding therewith at least a part of the paste-like layer therefromunder to form ridges of increased layer thickness of the said paste-like layer adjacent to the said opaque members,

and passing non-collimated photo energy through said transparent body and said gap to expose said photo sensitive material and change its characteristics only where not contacted by said opaque members of said pattern.

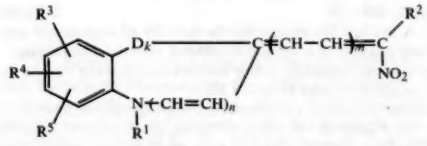
4,260,676

PHOTOTHERMOGRAPHIC EMULSIONS CONTAINING THERMOLABILE ACUTANCE DYES

Harvey A. Brown, Lake Elmo, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 29, 1978, Ser. No. 964,480
Int. Cl.³ G03C *1/02*
U.S. Cl. 430—517 **4 Claims**

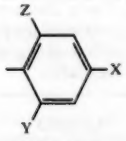
1. A photothermographic emulsion comprising a silver salt of an organic acid, silver halide in catalytic proximity to said silver salt, a binder for said silver salt and silver halide, and a reducing agent for silver ions, said emulsion being characterized by containing a dye of the formula



wherein

R^1 is an alkyl group of from 1 to 12 carbon atoms,

R^2 is the group



wherein X, Y, and Z are independently selected from the class consisting of H, NO_2, CN, perfluoroalkyl of 1 to 4 carbon atoms and halogen, with the proviso that at least one of X and Y is NO_2,

R^3, R^4, and R^5 are independently selected from the group consisting of H, halogen, alkyl or alkoxy of 1 to 4 carbon atoms, alkenyl of 2 to 4 carbon atoms, $-(CH_2)_p COOH$ wherein p is 0, 1, 2, or 3, $-NO_2$, $-NH_2$, or $-NHCOCH_3$, or any two of the adjacent groups are the atoms necessary to form a fused on benzene ring,

D represents $-HC{=}CH-$, 0, $>C(CH_3)_2$, —S—, —Se—, or $>NR^7$,

R^7 represents an alkyl group of 1 to 4 carbon atoms or CH^3CO-,

n is 1 when k is 0 and k is 1 when n is 0, and m is 0, 1, 2, or 3.

4,260,677

THERMOGRAPHIC AND PHOTOTHERMOGRAPHIC MATERIALS HAVING SILVER SALT COMPLEXES THEREIN

John M. Winslow, and Donald H. Klosterboer, both of Saint Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 659,839, Feb. 20, 1976, abandoned, which is a continuation-in-part of Ser. No. 558,839, Mar. 17, 1975, abandoned. This application Mar. 12, 1976, Ser. No. 666,350
Int. Cl.³ G03C *1/02*
U.S. Cl. 430—618 **14 Claims**

1. A thermographic recording medium comprising at least one layer comprising a binder, a reducing agent, and at least one silver salt complexed by at least one coordinating compound having a gross stability constant between 4.50 and 10.00 wherein at least 90% of all silver salt, excluding silver halide, within said layer is in the form of a silver salt complex with said at least one coordinating compound.

4,260,678

DETERMINING CREATINE KINASE ISOENZMES VIA IMMOBILIZED ANTIBODY-ISOENZYME COMPLEXES

Cyrus A. Lepp, Corning, and Gerald Odstrchel, Horseheads, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Feb. 23, 1979, Ser. No. 14,315
Int. Cl.³ C12Q *1/65, 1/50*
U.S. Cl. 435—7 **15 Claims**

1. A method for determining the presence of creatine kinase isoenzymes in a fluid sample which comprises bringing immobilized antibody specific for a given creatine kinase isoenzyme selected from MM or BB forms into contact with such sample under conditions suitable for forming an immobilized antibody-isoenzyme complex, isolating the immobilized antibody or resulting immobilized antibody-isoenzyme complex having substantial enzymatic activity or mixture thereof, and then directly testing the isolated immobilized phase for isoenzymatic activity.

6. A method for determining the presence of creatine kinase isoenzymes in a fluid sample which comprises the steps of:

A. combining the fluid sample or an aliquot thereof with an immobilized antibody specific for a given creatine kinase isoenzyme selected from BB or MM forms;

B. incubating the mixture resulting from step A under conditions suitable for forming an immobilized antibody-isoenzyme complex;

C. separating from the incubated mixture of step B the immobilized antibody or resulting immobilized antibody-isoenzyme complex having substantial isoenzyme activity or mixture thereof; and

D. directly assaying the immobilized phase obtained from step C for isoenzyme activity.

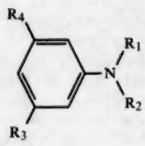
4,260,679

METHOD AND REAGENT FOR THE QUANTITATIVE DETERMINATION OF HYDROGEN PEROXIDE AND PRECURSORS THEREOF

Mitsuru Tsuda, Mishima, and Toshio Tatano, Numazu, both of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Aug. 1, 1979, Ser. No. 62,742
Claims priority, application Japan, Aug. 1, 1978, 53-93835
Int. Cl.³ C12Q *1/28, 1/54, 1/60, 1/62*
U.S. Cl. 435—10 **8 Claims**

1. A colorimetric reagent for the quantitative determination of hydrogen peroxide in a sample comprising a peroxidase, a hydrogen donor and an electron or radical acceptor, wherein said hydrogen donor is a compound of the formula



wherein

R_1 is CH_3, C_2H_5, CH_2OH, CH_2CH_2OH, $CH_2CH_2NH_2$ or $COCH_3$:

R_2 is CH_2OH, CH_2CH_2OH, $CH_2CH_2NH_2$, $CH_2NHCOCH_3$, $CH_2CH_2NHCOCH_3$ or $COCH_3$;

R_3 is H, CH_3, C_2H_5 or OCH_3; and

R_4 is H or CH_3.

5. A method of quantitatively determining hydrogen peroxide in a sample which comprises treating the sample with a colorimetric reagent comprising a peroxidase, a hydrogen donor and an electron or radical acceptor to form a pigment, and colorimetrically measuring the amount of pigment formed, wherein there is used as the hydrogen donor a compound of the formula defined in claim 1.

4,260,680

METHOD AND APPARATUS FOR THE MEASUREMENT OF GLUCOSE CONTENT

Kozo Muramatsu, Machida, and Kuniko Samizo, Tachikawa, both of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Filed Oct. 6, 1978, Ser. No. 949,130

Claims priority, application Japan, Oct. 22, 1977, 52/127102

Int. Cl.[3] C12Q *1/54, 1/26;* C12M *1/34*

U.S. Cl. 435—14 **11 Claims**

1. In a method of measuring glucose content, in which the glucose content of a liquid sample is analyzed by contacting the glucose-containing liquid sample with glucose oxidase to produce hydrogen peroxide and the amount of hydrogen peroxide produced is determined, the improvement comprising pretreating the liquid sample with the salt form of a strongly basic anion exchange resin and the salt form of a strongly acidic cation exchange resin, then contacting the sample with glucose oxidase to produce hydrogen peroxide in amount proportional to the glucose present in the sample and determining the amount of hydrogen peroxide produced through detection electrodes to which an alternating voltage of rectangular wave form is applied thereby generating an oxidation current proportional to the amount of hydrogen peroxide present in the sample located at the detection electrodes and detecting said oxidation current.

9. An apparatus for measuring glucose content, which involves:

(a) an ion exchange resin column section of at least one column of the salt form of a strongly basic anion exchange resin and the salt form of a strongly acidic cation exchange resin, the columns of said column section being in series when there is more than one column in the section, and an inlet conduit and an outlet conduit joined to the column section for passing a glucose-containing liquid sample therethrough,

(b) means for supplying a buffer solution to said liquid sample while it is passing through said outlet conduit joined to the ion exchange resin column section, said means including a buffer solution conduit joined to the outlet conduit at a location between its termini,

(c) a column of immobilized glucose oxidase attached to the terminus of said outlet conduit distant from the ion exchange resin column section for passing therethrough the liquid sample, after it has left the column of said ion exchange resin and then has been diluted with a buffer solution, to produce hydrogen peroxide by contacting the liquid sample with glucose-oxidase,

(d) an amperometric detector with detection electrodes to which an alternating voltage of rectangular wave form is applied, for determining the amount of hydrogen peroxide contained in the liquid sample which has left the column of immobilized glucose oxidase and a conduit joining the glucose oxidase to the amperometric detector for delivering the liquid sample to the amperometric detector.

4,260,681

REAGENT SYSTEM AND METHOD FOR ASSAYING PEPTIDASE ENZYMES

John K. Pollard, Jr., La Jolla, Calif., assignor to Calbiochem-Behring Corp., La Jolla, Calif.

Filed Dec. 28, 1978, Ser. No. 973,851

Int. Cl.[3] C12Q *1/32, 1/36*

U.S. Cl. 435—24 **14 Claims**

1. A reagent system for assaying a biological specimen for a peptidase enzyme, said reagent system comprising:

(a) a peptide substrate in which the C-terminal amino acid is dehydroalanine;

(b) the enzyme lactate dehydroagenase;

(c) the reduced coenzyme NADH; and

(d) a buffer material;

wherein (a), (b), (c) and (d) are present in amounts sufficient to ensure that the peptidase catalyzed hydrolysis of substrate is rate limiting.

4,260,682

HIGH SENSITIVITY ASSAYS FOR ANGIOTENSIN CONVERTING ENZYME

James W. Ryan, 3420 Poinciana Ave., Miami, Fla. 33133, and Alfred Chung, 8781 SW. 87th St., Miami, Fla. 33173

Division of Ser. No. 854,538, Nov. 25, 1977. This application Apr. 4, 1979, Ser. No. 26,592

Int. Cl.[3] C12Q *1/36*

U.S. Cl. 435—24 **3 Claims**

1. A method for measuring the activity of angiotensin converting enzyme in a sample of clinical material comprising:

providing a reaction buffer comprising chloride ions in the range from 0.01 M to 0.5 M,

mixing the sample of clinical material together with benzoyl-PheAlaPro in the reaction buffer, the benzoylPheAlaPro having a final concentration within the range from 1×10^{-10} M to 7×10^{-5} M, to provide a reaction mixture,

incubating the reaction mixture in order to permit any angiotensin converting enzyme catalyzed reaction to proceed to a measureable extent,

stopping the reaction by acidifying to the reaction mixture, and

measuring the amount of remnant reaction product produced by angiotensin converting enzyme catalyzed hydrolysis of benzoylPheAlaPro.

4,260,683

PROCESS FOR PRODUCING ANTIBACTERIAL AGENTS

Hiroshi Kawaguchi, Tokyo; Masataka Konishi, Yokohama; Takashi Tsuno, Higashimurayama, and Takeo Miyaki, Yokohama, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 47,455, Jun. 11, 1979, Pat. No. 4,250,170, which is a continuation-in-part of Ser. No. 955,035, Oct. 26, 1978, abandoned. This application Dec. 14, 1979, Ser. No. 103,325

Int. Cl.[3] C12P *19/44*

U.S. Cl. 435—74 **2 Claims**

1. A process for the production of the antibiotic Bu-2349A which comprises cultivating a Bu-2349A-producing strain of the genus Bacillus under submerged aerobic conditions in an aqueous nutrient medium until a substantial amount of Bu-2349A is produced by said organism in said culture medium and recovering the Bu-2349A from the medium in substantially pure form.

2. A process for the production of the antibiotic Bu-2349B which comprises cultivating a Bu-2349B-producing strain of the genus Bacillus under submerged aerobic conditions in an aqueous nutrient medium until a substantial amount of Bu-2349B is produced by said organism in said culture medium and recovering the Bu-2349B from the medium in substantially pure form.

4,260,684

STEREOSELECTIVE RESOLUTION OF PHENYLGLYCINE DERIVATIVES AND 4-HYDROXYPHENYLGLYCINE DERIVATIVES WITH ENZYME RESINS

Hermann Schutt, Wuppertal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 1, 1979, Ser. No. 8,631

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1978, 2807286

Int. Cl.³ C12P *13/04*; C07B *19/02*; C12P *13/02*

U.S. Cl. 435—106 **14 Claims**

1. A process for the stereoselective resolution of a DL-phenylglycine derivative which comprises hydrolyzing at 20° to 40° C. and at a pH range of 6 to 8 an ester or amide group on an N-acyl-L-phenylglycine ester or amide in an N-acyl-DL-phenylglycine ester or amide in solution by the action of an enzyme bonded to a carrier to form a mixture of (1)N-acyl-L-phenylglycine and (2)N-acyl-D-phenylglycine ester or amide and separating the N-acyl-D-phenylglycine ester or amide from the N-acyl-L-phenylglycine.

4,260,685

SACCHARIFICATION OF CELLULOSE

Mark Pilipski, 89 Mountainside Ter., Clifton, N.J. 07013, assignor to Mark Pilipski, Clifton, N.J.; Martin G. Sturman, Melrose Park, Pa. and Michael Ebert, Mamaroneck, N.Y.

Continuation-in-part of Ser. No. 936,646, Aug. 24, 1978. This application Aug. 2, 1979, Ser. No. 62,980

Int. Cl.³ C13K *1/02*; C12C *11/00*

U.S. Cl. 435—161 **6 Claims**

1. A method for converting raw stock that is rich in cellulose into glucose and other useful products, comprising the steps of immersing the stock in a bath of anhydrous liquid hydrogen chloride to hydrolyze the cellulose, and separating the reaction products from the bath to provide said glucose and other products.

4,260,686

PROCESS FOR THE ENZYMATIC SOFTENING OF FURS

Adolf Asbeck, Düsseldorf; Hans F. Pfeiffer, Haan; Juergen Plapper, and Rolf Schmid, both of Hilden, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Aug. 17, 1979, Ser. No. 67,512

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1978, 2836824

Int. Cl.³ C14C *1/00*

U.S. Cl. 435—265 **7 Claims**

1. A process for the enzymatic softening of furs, which comprises contacting a fur with an acid aqueous liquor containing an acid protease from a fungus strain of the genus *Rhizopus rhizopodiformis*, said acid protease being effective in the pH range of from about 2.5 to 6.5.

4,260,687

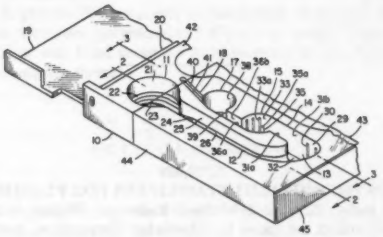
DIAGNOSTIC DEVICE

Donald P. Kronish, Rockaway; Walter E. Jacobson, Morris Plains; Doris B. Taylor, Parsippany, and William D. Young, Montclair, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Sep. 7, 1976, Ser. No. 721,021

Int. Cl.³ C12M *1/20*

U.S. Cl. 435—301 **23 Claims**



1. An improved diagnostic device comprising, a frame of substantially planar form having a transversely extending margin, which has a top surface into which are recessed a first well for containing a liquid test suspension, a second well for contacting the test specimen with a reagent and a third well for contacting the reacted test suspension with an indicator; wherein through the arrangement of the frame to a predetermined first spatial orientation a liquid communication between the first and second wells can be provided when the frame is rotated from its normal horizontal position about a first axis running parallel to a margin of the frame; and wherein further through the arrangement of the frame to a predetermined second spatial orientation a liquid communication between the second and third wells can be provided, said improvement comprising a first channel extending from the first well toward the transversely running margin of the frame providing for liquid communication between the first and second wells, said channel turning substantially parallel to the margin at its distal end to intersect the second well, the second well being transversely displaced from the first well; a second channel extending away from the margin substantially parallel to the first channel providing for liquid communication between the second and third wells, the second channel intersecting the third well, and the third well being substantially aligned with the second well; said wells and said channels between said wells being open to said top surface and a clear transparent film is provided in adhesive sealing contact with the top surface of the frame covering the wells, except the first well, whereby the first axis, about which the frame is rotated from its normal horizontal position in order to provide for liquid communication between the first and second wells, runs parallel to the transversely extending margin; and further providing for liquid communication between the second and third wells when the frame is rotated about a second axis, which is perpendicular to the top surface of the frame.

4,260,688

FLAME-PROOFING OF FLEXIBLE POLYURETHANE FOAMED PLASTICS BY POST-TREATMENT USING AQUEOUS AMMONIACAL COMBINATIONS OF BENZENEPHOSPHONIC ACID/MELAMINE SALTS AND POLYMERIC CHLORINE-CONTAINING LATEX

Eli Simon, 7175 Little Harbor Dr., Huntington Beach, Calif. 92648

Filed Feb. 8, 1980, Ser. No. 120,087

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—54 **3 Claims**

1. Aqueous mixtures of the salts of benzenephosphonic acid and melamine as flame-retardants made ammoniacal to a pH of

8 to 10 wherein the mol percentage of benzenephosphonic is within the range of 33⅓ to 66⅔ mol percent, and a carboxylated vinylidene chloride-butadiene copolymer latex having a chlorine content of approximately 36% and a pH of approximately 8 as a carrier for the flame-retardant salts, in weight ratios of flame-retardant salts to polymeric carrier solids from 1.5 to 1 to 2.0 to 1 respectively, for the post-treatment of flexible polyurethane foamed plastics to impart reduced combustibility and improved flame-retardency.

4,260,689

POLYMERIC LIGHT STABILIZERS FOR PLASTICS

Jean Rody, Basel, and Michael Rasberger, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 896,676, Apr. 14, 1978, abandoned, which is a continuation of Ser. No. 793,708, May 4, 1977, abandoned. This application Dec. 4, 1978, Ser. No. 966,041

Claims priority, application Switzerland, May 11, 1976, 5890/76

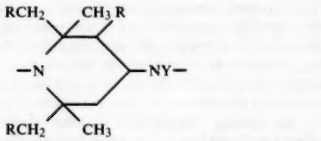
Int. Cl.[3] **C08G** *59/10*

U.S. Cl. 525—55 **7 Claims**

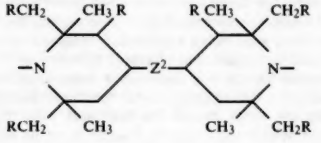
1. A polyamine of the formula

$$\{NY—A—NY—F\}_n$$

in which —NY—A—NY— represents a radical of the formula LXV or LXVI

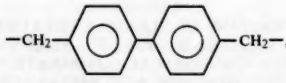


LXV

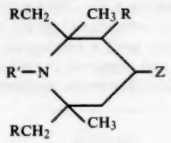


LXVI

wherein R represents hydrogen or alkyl of 1-5 C atoms, Z^2 represents one of the radicals —N(R″)—, —NR[3]—CO—NR[3]—, —NR[3]—CO—CO—NR[3]—, —NR[3]—CO—Z^3—CO—NR[3]—, alkylene of 4-10 C atoms, p-xylylene,

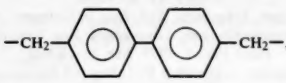


O-alkylene-O- of 1-10 C atoms, -O-alkenylene-O- of 4-8 C atoms, or -O-xylylene-O-, in which R^3 represents hydrogen, alkyl of 1-12 C atoms, cyclohexyl, benzyl or aryl of 6-14 C atoms, R″ represents alkanoyl of 1-8 C atoms or alkenoyl of 3-5 C atoms, Z^3 represents alkylene of 1-10 C atoms or phenylene, Y represents hydrogen, alkyl of 1-12 C atoms, cyclohexyl, benzyl, or a polyalkylpiperidine radical of the formula

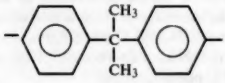


VIII

wherein R is as previously defined, R′ is hydrogen, alkyl of 1-12 C atoms, allyl, benzyl, acetyl, acryloyl or crotonyl and Z is a direct bond, —CH_2—CH_2— or —OCH_2—CH_2—CH_2—, F is alkylene of 2-12 C atoms, alkenylene of 4-8 C atoms, xylylene, hexahydroxylylene or one of the radicals



—CH_2—CH(OH)—CH_2—, —CH_2—CH(OH)—CH_2—*O*—Z^{10}—O—CH_2—CH(OH)—CH_2— or —CH_2C-H_2—O—CH_2CH_2— in which Z^{10} represents alkylene of 2-6 C atoms, —CH_2CH_2—O—CH_2CH_2—, cyclohexylene, phenylene or



and n denotes a value of from 2 to about 50.

4,260,690

THERMOPLASTIC POLYESTER MOULDING COMPOSITIONS WITH GOOD TOUGHNESS PROPERTIES

Rudolf Binsack, Krefeld; Dieter Rempel, Leverkusen; Helmut Korber, Odenthal, and Dieter Neuray, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 18, 1980, Ser. No. 113,369

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1979, 2902468

Int. Cl.[3] **C08L** *51/00*

U.S. Cl. 525—64 **9 Claims**

1. A mixture of

(1) 60 to 99% by weight of a thermoplastic polyester and

(2) 1 to 40% by weight of a polyolefin graft polymer obtainable from

(a) 70 to 99% by weight of a graft base consisting of a polymer of at least one member selected from the group consisting of aliphatic and aromatic mono-olefins, said polymer containing up to 50% by weight of polymerized other mono-olefinically unsaturated radically polymerizable compounds, or said polymer containing up to 5% by weight of polymerized diolefins and

(b) 1 to 30% by weight of a radically graftable ethylenically unsaturated compound, the percentages for (1) and (2) being based on the sum of (1) and (2), the percentages of (a) and (b) being based on the sum of components (a) and (b) and the remaining percentages set forth under (a) being based on the sum of the starting monomers used for the production of the graft base, such polyolefin graft polymer having been produced by contacting a melt of graft base (a) with oxygen or oxygen-containing gas for at most 10 minutes with intensive mixing under a pressure of from 1 to 150 bars and at a temperature of from 80° to 300° C., adding the ethylenically unsaturated compound to be grafted immediately after said contact with oxygen or

oxygen-containing gas with intensive mixing in the absence of oxygen or oxygen-containing gas and removing residual monomers after graft polymerization reaction.

4,260,691

POLYMERIC LIGHT STABILIZERS FOR PLASTICS

Jean Rody, Basel, and Michael Rasberger, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

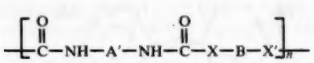
Division of Ser. No. 896,676, Apr. 14, 1978, abandoned, which is a continuation of Ser. No. 793,708, May 4, 1977, abandoned. This application Nov. 14, 1978, Ser. No. 960,557

Claims priority, application Switzerland, May 11, 1976, 5890/76

Int. Cl.³ C08G *18/38*

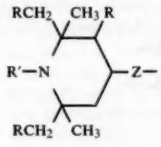
U.S. Cl. 525—130 **13 Claims**

1. A polyurethane or polyurethane-urea polymer of the formula Ia



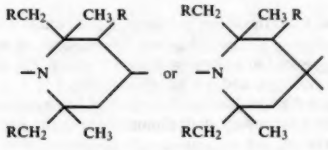
Ia

in which n denotes a value from 2 to about 50, X is NY or oxygen and X' denotes oxygen and Y denotes hydrogen, alkyl with 1–18 C atoms, cycloalkyl with 5–12 C atoms, aralkyl with 7–11 C atoms, aryl with 6–14 C atoms or a polyalkylpiperidine radical of the formula VIII

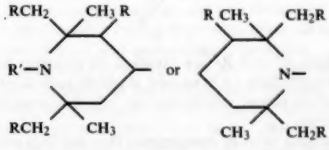


VIII

in which R is hydrogen or alkyl of 1–5 C atoms, R' is hydrogen, alkyl of 1–12 C atoms, alkenyl of 3–8 C atoms, alkinyl of 3–6 C atoms, aralkyl of 7–12 C atoms, alkanoyl of 1–8 C atoms or alkanoyl of 3–5 C atoms, —$OCH_2CH_2CH_2$—, and A' and B are divalent organic radicals, and, in the formula Ia, the chain contains at least one polyalkylpiperidine radical of the formula



or is substituted by a polyalkylpiperidine side group of the formula



in which R denotes hydrogen or alkyl with 1–5 C atoms and R' denotes hydrogen, alkyl with 1–12 C atoms, alkenyl with 3–8 C atoms, alkinyl with 3–6 C atoms, aralkyl with 7–12 C atoms, alkanoyl with 1–8 C atoms or alkenoyl with 3–5 C atoms.

4,260,692

PROCESS FOR PRODUCING A METHYL METHACRYLATE SERIES POLYMER TRANSLUCENT OR OPAQUE PLATE

Takeshi Komai, Lawrence, Kans., and Masaru Matsushima, Aichi, Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

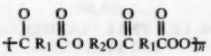
Filed Oct. 29, 1979, Ser. No. 88,793

Claims priority, application Japan, Nov. 1, 1978, 53-133781

Int. Cl.³ C08F *257/02*

U.S. Cl. 525—273 **1 Claim**

1. A process for preparing a translucent or opaque sheet, which comprises: polymerizing 100 parts by weight of styrene monomer with from about 0.5 to 10 parts by weight of peroxide having the formula

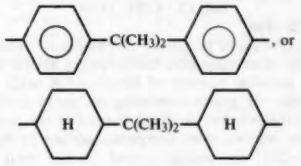


wherein

R_1 is alkylene having 1 to 15 carbon atoms or phenylene,

R_2 is alkylene having 2 to 10 carbon atoms,

—$(CH_2)_2O(CH_2)_2$—, —$(CH_2)_2O(CH_2)_2O(CH_2)_2$—



and n is a number from 2 to 20

at a temperature of from about 60° to about 90° C., for from about 2 to about 6 hours, to obtain polystyrene having peroxy groups therein; then partially polymerizing a mixture comprised of from about 0.5 to about 20 parts by weight of said polystyrene having peroxy groups therein and 100 parts by weight of second monomer consisting essentially of more than 80 wt. % of methyl methacrylate and less than 20 wt. % of one or more acrylic monomers and optionally a coloring agent at a temperature of from about 60° to about 90° C., for from about 1 to about 2 hours, to convert about 10 to about 30 wt. % of said second monomer to polymer whereby to obtain a syrup; then casting said syrup into a sheet-forming mold and maintaining the contents of said mold at a temperature of from about 40° to about 70° C., for from about 4 to about 10 hours, followed by heating at from about 100° to about 120° C. for from about 2 to about 6 hours, whereby to obtain a translucent or opaque sheet.

4,260,693

POLYCARBONATE COMPOSITIONS

Ping Y. Liu, Naperville, Ill., assignor to General Electric Company, Pittsfield, Mass.

Filed Aug. 27, 1979, Ser. No. 69,823

Int. Cl.³ C08L *69/00*

U.S. Cl. 525—148 **8 Claims**

1. A ternary polycarbonate composition comprising in admixture, a high molecular weight aromatic polycarbonate which is based on a dihydric phenol, from about 2 to about 6 parts by weight per hundred parts of said aromatic polycarbonate of copolymer A, which is a copolymer of a C_1–C_5 acrylate and a C_1–C_5 methacrylate, and from about 0.5 to about 4 parts by weight per hundred parts of said aromatic polycarbonate of copolymer B, which is a copolymer of a C_2–C_5 olefin and a C_1–C_5 acrylate, the weight ratio of acrylate:methacrylate in copolymer A being in the range of about 50–85:15–50 and the

weight ratio of olefin:acrylate in copolymer B being in the range of about 70–90:10–30.

4,260,694

P-METHYLSTYRENE DIENE BLOCK COPOLYMERS

Frederick C. Schwab, Metuchen, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 29, 1979, Ser. No. 98,585

Int. Cl.³ C08F *297/00*

U.S. Cl. 525—314 **5 Claims**

1. An A-B-A p-methylstyrene-conjugated diene-p-methylstyrene block copolymer containing, by weight of the block copolymer, about 10-40% p-methylstyrene and about 90–60% conjugated diene.

4,260,695

PROCESS FOR THE PREPARATION OF AROMATIC POLYESTERS

Harald Medem; Dieter Freitag, both of Krefeld, and Klaus Reinking, Wermelskirchen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 24, 1978, Ser. No. 963,309

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1977, 2753230

Int. Cl.³ C08L *75/00*

U.S. Cl. 525—466 **4 Claims**

1. In the process of preparing thermoplastic aromatic polymers having glass transition temperatures above 170° C. by reacting a reaction mixture of Bisphenol-A with a member selected from the group consisting of diaryl terephthalates, diaryl isophthalates and mixtures thereof in the presence of a catalyst, the improvement comprises adding to the reaction mixture 10–25% by weight, based on the total reactants' weight, of an aromatic polycarbonate having an average molecular weight of 600 to 15,000 and a glass transition temperature of 130° to 250° C.

4,260,696

PROCESS FOR THE PRODUCTION OF POLYURETHANE SILICATE FOAMS AND RESINOUS PRODUCTS UTILIZING ALDEHYDE-BROKEN DOWN ALKALI METAL CELLULOSE SILICATE POLYMER

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 13,139, Feb. 21, 1979, Pat. No. 4,226,982. This application Jun. 9, 1980, Ser. No. 157,515

Int. Cl.³ C08F *283/00*

U.S. Cl. 525—477 **14 Claims**

1. The process for the production of an isocyanate-terminated polyurethane silicate prepolymer by mixing and reacting the following components:

(a) aldehyde-broken down alkali metal cellulose silicate copolymer said broken down alkali metal cellulose silicate being produced by heating a mixture of a cellulose-containing plant, an alkali metal hydroxide and an oxidated silicon compound to 150° to 200° C. with agitation,

(b) organic polyisocyanate or polyisothiocyanate; with the priviso that an excess of isocyanate groups are used.

4,260,697

SURFACE-COATING BINDERS

Fritz E. Kempter, Mannheim; Heinrich Hartmann, Limbergerhof, and Erich Gulbins, Heidelberg-Neuenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 739,797, Nov. 8, 1976, abandoned. This application Aug. 10, 1978, Ser. No. 932,466

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1975, 2554080

Int. Cl.³ C08L *63/00*

U.S. Cl. 525—484 **18 Claims**

1. A surface-coating binder which is substantially free from epoxide groups and water-dilutable by protonization with acids, said binder being a reaction product of

(A) from 25 to 90 percent by weight of a Mannich base obtained from

(a_1) a polyhydric phenol which contains two or more aromatic rings and is free from ether groups, and which can be partially replaced by

(a_2) a monohydric or polyhydric phenol which contains two or more aromatic rings and contains an ether group,

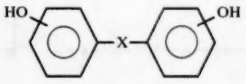
(b_1) a secondary amine which contains one or two hydroxy alkyl groups, mixed with

(b_2) a secondary dialkylamine or dialkoxyalkylamine and

(c) formaldehyde or a formaldehyde donor, the amount of (c) is at least one mole per mole of (b_1+b_2), and

(B) from 75 to 10 percent by weight of an epoxy resin, wherein

(a_1) is a phenol of the general formula



where X is a straight-chain or branched, divalent aliphatic radical of 1 to 3 carbon atoms or is SO_2, SO, O or CH_2—NR—CH_2 (where R is alkyl of 1 to 6 carbon atoms) and

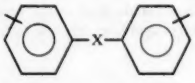
(a_2) is at least one further condensed phenol, which contains at least one phenolic hydroxyl group and in addition one or more ether groups in the molecule, having the general formula

$$HO—B—[O—E—O]_n—H$$

or

$$HO—B—[O—E—O]_n—P$$

where B is



and X has the above meanings, E is a radical, containing hydroxyl groups, obtained by addition of an epoxy compound to a phenolic hydroxyl group, P is phenyl or alkylphenyl, and n is an integer from 1 to 3,

(b_1) is a dialkanolamine of alcohols of 2 to 6 carbon atoms,

(b_2) is a secondary dialkylamine having the general formula

where R^1 and R^2 are identical or different and are a straight-chain or branched aliphatic radical of 2 to 10 carbon atoms, which may or may not contain alkoxy groups,

the weight ratio of components (b_1) and (b_2) being from 1:10 to 1:0.1,

at least a part of the hydroxyl groups bounded to aliphatic structures of the Mannich base (A) or of the epoxy resin (B) have been converted to urethane groups by reaction with a partially blocked polyisocyanate.

4,260,698

CO-CROSSLINKABLE BLEND COMPOSITION COMPRISING IODINE-CONTAINING FLUOROELASTOMER

Masayoshi Tatemoto, Osaka; Masayasu Tomoda, Otsu, and Yutaka Ueta, Uenonishi, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Oct. 4, 1979, Ser. No. 81,895
Claims priority, application Japan, Oct. 7, 1978, 53/123861
Int. Cl.[3] C08L 27/20, 27/24
U.S. Cl. 525—102 8 Claims

1. A co-crosslinkable blend composition which comprises (1) an iodine-containing fluoroelastomer, (2) at least one member selected from the group consisting of silicone oligomers, silicone elastomers, fluorosilicone elastomers, phosphonitrilic fluoroelastomers, tetrafluoroethylene/propylene copolymers and hexafluoropropylene/ethylene copolymers and (3) an organic peroxide.

4,260,699

POURABLE GROUT INCLUDING FAST ACTING POLYESTER ADHESIVE SYSTEMS AND METHOD OF USE

Anthony C. Plaisted, North Royalton, Ohio, assignor to Celtite, Inc., Cleveland, Ohio

Filed Sep. 6, 1979, Ser. No. 73,015
The portion of the term of this patent subsequent to Jan. 23, 1996, has been disclaimed.
Int. Cl.[3] C08L 67/06; C09J 3/16
U.S. Cl. 525—27 8 Claims

1. A pourable grout including solutions of unsaturated polyester resin in ethylenically unsaturated monomers and a catalyst paste therefor, the improvement being in providing with said polyester resin from 1 to 15% by weight of an ethylenically unsaturated monomer, and further providing as said catalyst paste the combination of an unsubstituted benzoyl peroxide, a halogen substituted benzoyl peroxide and a filler and plasticizer for said polyester, said halogen substituted benzoyl peroxide being selected from the group consisting of 2,4, dichoro benzoyl peroxide, and parachloro benzoyl peroxide, said halogen substituted benzoyl peroxide being present in said paste in an amount by weight of from 1 to 15% and said unsubstituted benzoyl peroxide being present in said paste in an amount greater than said substituted benzoyl peroxide.

4,260,700

UNDERWATER CURING OF EPOXY RESIN AND AMINE-TERMINATED LIQUID POLYMER AND PRODUCT THEREOF

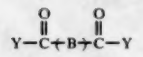
Thomas R. Cassutt, Copley; James W. Messerly, Stow, and Ronald L. Senderling, Cuyahoga Falls, all of Ohio, assignors to The B.F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 749,853, Dec. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 618,632, Oct. 1, 1975, abandoned. This application Jan. 24, 1977, Ser. No. 761,562
Int. Cl.[3] C08L 63/00
U.S. Cl. 525—113 9 Claims

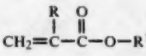
1. A process comprising applying an underwater-curing composition to a dry or wet surface or a surface submerged in water, and thereafter curing the composition on said wet or submerged surface, said composition comprising

(A) 1 equivalent of at least one non-cycloaliphatic epoxy resin containing at least an average of about 1.7 epoxy groups per molecule, said resin having an epoxy equivalent weight from about 70 to about 6,000, and

(B) from about 0.01 to about 1.5 equivalents of at least one amine-terminated liquid polymer containing an average from about 1.5 to about 4 amine groups per molecule, said groups being primary, secondary or a mixture thereof, and said polymer having the formula



wherein Y is an univalent radical obtained by removing a hydrogen from an amine group of an aliphatic, alicyclic or heterocyclic amine containing from 2 to 20 carbon atoms and at least two amine groups, at least two of said amine groups being primary, secondary or a mixture thereof, and B is a polymeric backbone containing carbon-carbon linkages comprising at least 95% of total polymeric backbone weight, said backbone B containing polymerized units of at least one vinylidene monomer having at least one terminal $CH_2{=}C<$ group, said monomer being selected from the group consisting of (a) monoolefins containing 2 to 14 carbon atoms, (b) dienes containing 4 to 10 carbon atoms, (c) vinyl and allyl esters of carboxylic acids containing 2 to 8 carbon atoms, (d) vinyl and allyl ethers of alkyl radicals containing 1 to 8 carbon atoms, and (e) acrylic acids and acrylates having the formula



said R being hydrogen or an alkyl radical containing 1 to 3 carbon atoms, and said R^1 being hydrogen, an alkyl radical containing 1 to 18 carbon atoms, or an alkoxyalkyl, alkylthioalkyl or cyanoalkyl radical containing 2 to 12 carbon atoms.

4,260,701

FORMULATION FOR SELF-CURING ARTIFICIAL FINGERNAILS CONTAINING METHOXYETHYL METHACRYLATE

Henry L. Lee, Jr., Pasadena, Calif., assignor to Lee Pharmaceuticals, S. El Monte, Calif.

Filed May 12, 1980, Ser. No. 148,735
Int. Cl.[3] C08F 265/06
U.S. Cl. 525—303 18 Claims

1. A composition suitable to be applied to a fingernail as a hardenable coating or to form an artificial nail, having an acrylic binder, a peroxide catalyst and t-amine accelerator curing system, and containing polymeric filler that is at least partially soluble in the composition, the composition being formulated and the catalyst and the accelerator being present in a quantity to cause self-curing to occur in situ within about 400 seconds after mixture of the ingredients and application to a nail, under ambient conditions to which the nail is normally exposed, wherein the acrylic binder consists of a mixture of the following ingredients, by weight based on the weight of the acrylic binder:

(a) a first monomer component consisting of from about 0% to about 20% of a polymerizable, ethylenically unsaturated monomer that can form a cross-linked polymer upon polymerization during curing of the composition, which monomer contains in its molecule at least two groups that are capable of addition polymerization upon contact with a peroxide-type free radical initiator and a tertiary amine-type accelerator, the polymerizable groups being members of the group consisting of allyl, acryloyl, methacryloyl, and combinations thereof, and

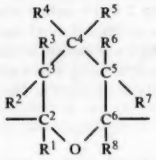
(b) a second monomer component consisting of monomer that is monoethylenically unsaturated, in an amount up to about 100%, that copolymerizes with the first monomer component upon self-curing of the composition to form a copolymeric structure that is cross-linked, the second monomer comprising at least a major proportion of methoxyethyl methacrylate.

4,260,702
POLYMERS CONTAINING CYCLIC ETHER UNITS JOINED THROUGH 2,6-DIYL LINKAGES

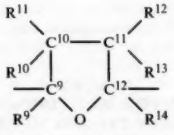
William J. Schultz, and Samuel Smith, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 26, 1979, Ser. No. 97,138
Int. Cl.³ C08G *61/08, 59/14*
U.S. Cl. 525—334 **18 Claims**

1. A polymer having a number average molecular weight of at least 1000 and containing at least 5% by weight of recurring cyclic ether units joined one to the other to provide segments of at least two of said units, at least one of said units being a tetrahydropyran 2,6-diyl unit of the formula



while the remainder of said cyclic ether units are selected from said tetrahydropyran 2,6-diyl units and tetrahydrofuran 2,5-diyl units, wherein said tetrahydrofuran 2,5-diyl units have the formula



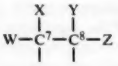
wherein

R^1, R^8, R^9, R^{10}, R^{11}, R^{12}, R^{13} and R^{14} are each selected from hydrogen and lower alkyl groups;

R^2 and R^7 are each selected from hydrogen, lower alkyl groups and aryl groups;

R^4 and R^5 are each selected from hydrogen, lower alkyl groups, aryl groups and halo groups, and

R^3 and R^6 are selected from hydrogen, lower alkyl groups and aryl groups, or combine to form a divalent linking moiety having the formula



(II)

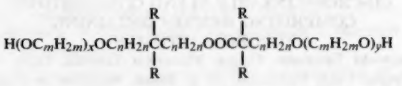
wherein C^7 and C^8 are joined to the C^3 and C^5 positions respectively of said cyclic ether units; W and Z are each monovalent groups and X and Y are each monovalent groups or combine to form a divalent linking moiety Q that bridges between C^7 and C^8.

4,260,703
NOVEL URETHANE-ACRYLATE AND RADIATION CURABLE COMPOSITIONS

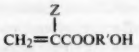
Leonard E. Hodakowski, St. Albans, and Joseph V. Koleske, Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Oct. 26, 1979, Ser. No. 88,554
Int. Cl.³ C08L *75/08*
U.S. Cl. 525—455 **9 Claims**

1. Urethane acrylate ester diol alkoxylates comprising the reaction products of (A) an ester diol alkoxylate of the formula:



wherein m is an integer having a value of from 2 to 4; n is an integer having a value of from 1 to 5; x and y are each integers having a value of from 1 to 20; and R is an unsubstituted or substituted, linear or branched alkyl group having from 1 to 8 carbon atoms, (B) an organic polyisocyanate, and (C) a hydroxyalkyl acrylyl compound of the formula:



wherein Z is hydrogen or methyl and R′ is a linear or branched divalent alkylene group having from 2 to 8 carbon atoms.

4,260,704
RESINS BASED ON NOVOLAKS, THEIR PRODUCTION AND THEIR USE AS TACKIFIERS

Manfred Schmidt, Krefeld; Theo Kemperman, Cologne; Dieter Freitag, Krefeld; Hermann Fries, Berg. Gladbach, and Erich Esch, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 10, 1978, Ser. No. 949,417
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1977, 2746138
Int. Cl.³ C08G *8/28;* **C08L** *61/14*
U.S. Cl. 525—501 **7 Claims**

1. Novolak resins having a softening point of from 50° to 130° C., an OH-number of from 250 to 400 and an iodine number of from 90 to 160, obtainable by reacting

(a) an alkyl phenol-formaldehyde novalak or an alkyl phenol mixture-formaldehyde novolak produced by reacting an alkyl phenol or an alkyl phenol mixture with one to two times the molar quality of formaldehyde in the presence of acid catalyst at temperatures of from 100° to 180° C.

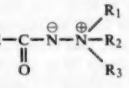
(b) with (i) a polynuclear phenol or polynuclear phenol mixture and (ii) a member selected from the group consisting of formaldehyde, an aliphatic aldehyde, aliphatic aldehyde mixture and mixtures thereof, under acid-catalyzed conditions, the ratio by weight of the alkyl phenol or alkyl phenol mixture to the polynuclear phenol or polynuclear phenol mixture being from 2.2:1 to 1:10.

4,260,705
ADDITION COPOLYMERS OF AMINIMIDES USEFUL FOR AFFINITY CHROMATOGRAPHY

John C. M. Tsibris, Gainesville, Fla., assignor to Board of Regents, for and on behalf of the University of Florida, Tallahassee, Fla.

Division of Ser. No. 701,410, Jun. 30, 1976, Pat. No. 4,162,355. This application Nov. 16, 1977, Ser. No. 852,041
Int. Cl.³ C08F *214/30, 8/30, 8/32*
U.S. Cl. 525—330 **9 Claims**

1. A polymer suitable for use in affinity chromatography comprising an addition copolymer of (1) at least one aminimide of the structural formula:



wherein

R_1 and R_2 are the same or different and represent lower alkyl;

R_3 represents an organic group;

Z represents the residue of a polymerizable vinyl compound, and (2) a vinyl compound having at least one pendant primary halomethyl group; said polymer having covalently coupled thereto by reaction with a portion of the pendant halomethyl groups, an amine ligand which affords sites for binding in affinity chromatography, the remainder of said pendant halomethyl groups being covalently coupled with an amine containing a pendant hydrophilic group.

4,260,706

OLEFIN POLYMERIZATION CATALYST

Louis J. Rekers, Wyoming; Stanley J. Katzen, and Jerome H. Krekeler, both of Cincinnati, all of Ohio, assignors to National Petro Chemicals Corp., New York, N.Y.

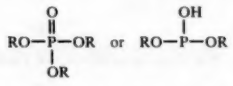
Division of Ser. No. 925,510, Jul. 7, 1978, Pat. No. 4,192,775, which is a continuation-in-part of Ser. No. 724,484, Sep. 20, 1976, which is a continuation-in-part of Ser. No. 558,504, Mar. 14, 1975, Pat. No. 3,984,351. This application Jun. 21, 1979, Ser. No. 50,728

Int. Cl.³ C08F *4/78*

U.S. Cl. 526—100 **6 Claims**

1. A process for polymerizing an olefin which comprises contacting the olefin with a catalyst system produced by

(a) depositing an organophosphoryl chromium reaction product of chromium trioxide and a phosphorus compound having the formula



wherein R is alkyl, aralkyl, aryl, cycloalkyl, or hydrogen but at least one R is other than hydrogen, upon a solid inorganic support material;

(b) depositing aluminum acetylacetonate upon said support material; and,

(c) heat-activating said supported organophosphoryl chromium reaction product and aluminum acetylacetonate in a non-reducing atmosphere at a temperature above about 300° C. up to the decomposition temperature of the support material.

4,260,707

SOLUTION POLYMERIZATION OF CONJUGATED DIENES

Gerd Sylvester; Josef Witte, both of Leverkusen, and Günter Marwede, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 54,632, Jul. 3, 1979. This application Feb. 1, 1980, Ser. No. 117,523

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1978, 2830080

Int. Cl.³ C08F *4/52*

U.S. Cl. 526—114 **10 Claims**

1. A process for the polymerization of a conjugated diene which comprises polymerizing the conjugated diene in the presence of a catalytic amount of a catalyst comprising

(A) a hydrocarbon soluble reaction mixture formed by reacting a rare earth carboxylate, $M(RCO_2)_3$, with an aluminum trialkyl, AlR^1_3,

(B) an aluminum trialkyl, AlR^2_3, and/or an alkylaluminumhydride and

(C) a Lewis acid selected from the group consisting of an organometallic halide whose metal is of main group 3a or 4a of the Periodic System and a halide of an element of main group 3a, 4a or 5a of the Periodic System,

wherein

M denotes a trivalent rare earth element with an atomic number of 57 to 71,

R denotes a saturated or unsaturated, straight chain or branched chain alkyl group having 1 to 20 C-atoms which may be substituted one or more times with cycloalkyl having 5 to 7 C-atoms and/or phenyl, the carboxyl group being attached to a primary, secondary or tertiary C-atom; a cycloalkyl group having 5 to 7 ring carbon rings, which may be substituted one or more times with alkyl groups having from 1 to 5 C-atoms; or an aromatic group having from 6 to 10 ring carbon atoms, which may be substituted one or more times with alkyl groups having 1 to 5 C-atoms, and

R^1 and R^2 are identical or different, straight chain or branched chain alkyl groups having from 1 to 10 C-atoms.

4,260,708

PHOSPHITE IN MGX_2 SUPPORTED $TIX_3/ALCL_3$ CATALYST SYSTEM

Lawrence M. Fodor, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 864,120, Dec. 23, 1977, Pat. No. 4,130,503. This application Sep. 1, 1978, Ser. No. 939,085

Int. Cl.³ C08F *4/02, 10/06*

U.S. Cl. 526—125 **8 Claims**

1. A polymerization process comprising contacting propylene under polymerization conditions with a catalyst which forms on milling $MgCl_2$, $TiCl_3$, $AlCl_3$ and an aryl phosphite to form a first component which first component is combined with a cocatalyst formed by contacting a trialkyl aluminum compound, a dihydrocarbylaluminum chloride, and a para-alkoxy benzoic acid ester, said $MgCl_2$ being present in an amount within the range of 50 to 95 weight percent, said $TiCl_3$ being present in an amount within the range of 2 to 20 weight percent, said $AlCl_3$ being present in an amount of 0.1 to 10 weight percent and said organic phosphite being present in an amount of 1 to 20 weight percent, based on the total weight of said first component.

4,260,709

MAGNESIUM-BASED CATALYST FOR USE IN THE POLYMERIZATION OF OLEFINS

Daniel C. Durand, and Pierre M. F. Mangin, both of Martigues, France, assignors to Naphthachimie, Paris, France

Continuation of Ser. No. 500,545, Aug. 26, 1974, abandoned, which is a continuation of Ser. No. 205,382, Dec. 6, 1971, abandoned. This application Aug. 24, 1978, Ser. No. 936,224

Claims priority, application France, Dec. 4, 1970, 70 43628; Jun. 30, 1971, 71 23861

Int. Cl.³ C08F *4/66, 10/02*

U.S. Cl. 526—137 **16 Claims**

7. A catalyst for the polymerization of olefins consisting essentially of (1) a reaction product of a compound of a transition metal of Groups IVa, Va and VIa having a valence of at least 4 selected from the group consisting of halogenated, organic and organic-halogenated compounds of said transition metal, magnesium and an alkyl halide, with said compound of transition metal and at least one of the alkyl halide and the magnesium being added to an inert solvent, with the other of the alkyl halide and the magnesium being added progressively to carry out the reaction of said compound of said transition metal, said magnesium and said alkyl halide, the molar ratio of the transition metal to the magnesium being less than 0.5 and the mole ratio of the alkyl halide to the magnesium being within the range of 0.5 to 10 and (2) at least one organo metallic compound of a metal selected from the group consisting of the metals of Group II and Group III.

4,260,710
PROCESS FOR THE PREPARATION OF HOMOPOLYMERS AND COPOLYMERS OF α-MONOOLEFINS

Gerhard Staiger, Bobenheim-Roxheim; James F. R. Jaggard, Ludwigshafen, and Paul Schneider, Mutterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 6, 1979, Ser. No. 72,984
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1978, 2841645
Int. Cl.³ C08F 4/66, 10/06
U.S. Cl. 526—142 **3 Claims**

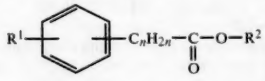
1. In a process for the preparation of homopolymers and copolymers of C_2–C_6-α-monoolefins at from 20° to 160° C. under pressures of from 1 to 100 bar, by means of a Ziegler-Natta catalyst system comprising

(1) a titanium halide of the formula

$$TiCl_3.mAlCl_3$$

where m is a number from 0 to 0.5,

(2) an oxygen compound of the formula

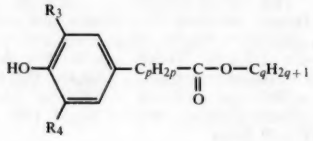


where R^1 is hydrogen, C_1–C_4-alkyl or C_1–C_4-alkoxy, R^2 is C_1–C_4-alkyl and n is an integer from 0 to 3, and

(3) an aluminum-alkyl of the formula

where X and Y are each alkyl of not more than 8 carbon atoms, and Z is chlorine,

wherein (I) the molar ratio of titanium halide (1):oxygen compound (2) is from 1:1 to 20:1, (II) the molar ratio of titanium halide (1):aluminum-alkyl (3) is from 1:1 to 1:20, and (III) the titanium halide (1) and the oxygen compound (2) have been milled together before use, the improvement which comprises employing a catalyst system which contains, as a further component (4), a phenolic compound of the formula



where

R_3 is tert-butyl,

R_4 is hydrogen or tert-butyl,

p is an integer of 1 to 4,

q is an integer of 8 to 18,

$-C_pH_{2p}-$ is straight-chained, and

$-C_qH_{2q+1}$ is straight-chained

with the proviso that the molar ratio aluminum-alkyl (3):phenolic compound (4) is from 3:1 to 25:1.

4,260,711
1-OLEFIN POLYMERIZATION CATALYST

Richard V. Cartwright, Sussex, N.J., assignor to Hercules Incorporated, Wilmington, Del.

Filed Apr. 21, 1980, Ser. No. 142,498
Int. Cl.³ C08F 4/66, 10/06
U.S. Cl. 526—153 **4 Claims**

1. In a process for the polymerization of 1-olefins in the presence of a solid catalyst component composed of titanium trichloride and an activator component composed of a trialkylaluminum, the improvement which comprises substituting a dialkylaluminum dialkylphosphate for a portion of the trialkylaluminum in the activator, such substitution being made so as to provide a mole ratio of trialkylaluminum to dialkylaluminum dialkylphosphate of from about 1:4 to about 2:1.

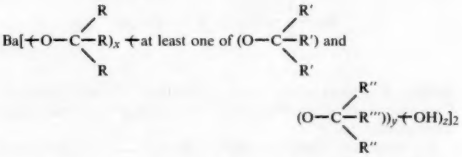
4,260,712
PREPARATION OF BARIUM-ALKOXIDE SALTS

Sundar L. Aggarwal, Akron; Ivan G. Hargis, Tallmadge; Russell A. Livigni, and Hubert J. Fabris, both of Akron, all of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed Sep. 20, 1979, Ser. No. 77,428
Int. Cl.³ C08G 8/00, 14/04
U.S. Cl. 526—181 **10 Claims**

2. The method which comprises polymerizing under inert conditions in a hydrocarbon solvent at a temperature of from about −20° to 60° C. a monomer selected from the group consisting of (I) butadiene-1,3 and (II) mixtures of butadiene-1,3 and up to about 30% by weight total of the mixture of styrene and/or isoprene with a catalyst in a minor effective amount sufficient to polymerize said monomer to obtain a polymer and containing a complex of

A. a compound having the general formula



where at least one R is a methyl or cyclohexyl radical, where the remaining Rs are selected from the group consisting of alkyl and cycloalkyl radicals having from 1 to 6 carbon atoms which may be the same or different, where the R's are alkyl radicals of from 2 to 6 carbon atoms which may be the same or different, where the R"s are alkyl radicals of from 1 to 4 carbon atoms which may be the same or different, where R"' is a hydrocarbon radical having a molecular weight of from about 250 to 5,000, where the mol ratio of x+y to z is from about 100:0 to 88:12 and where the mol ratio of x to y is from about 1:0.3 to 1:1, said compound A containing not greater than about 0.1% be weight of nitrogen and

B. a hydrocarbon lithium compound having from 2 to 200 carbon atoms and 1 to 6 lithium atoms, the mol ratio of A to B based on barium metal and lithium metal being from about 0.60:1 to 1.1:1, said solvent being a solvent for said monomer and said polymer.

4,260,713
PROCESS FOR PRODUCING WATER-SOLUBLE POLYMERS

Motoaki Tanaka, Urawa; Tsutomu Miyagawa, and Takashi Nakata, both of Kawagoe, all of Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka, Japan

Filed Apr. 9, 1979, Ser. No. 28,190
Claims priority, application Japan, Apr. 8, 1978, 53-41568
Int. Cl.³ C08F 4/04, 120/54
U.S. Cl. 526—215 **5 Claims**

1. A process for producing a water-soluble polymer which comprises polymerizing a water-soluble monomer by using as a polymerization initiator 2,2'-azobis(N,N'-dimethyleneisobutyramidine) or an acid addition salt thereof or a mixture of 2,2'-azobis(N,N'-dimethyleneisobutyramidine) or an acid addition salt thereof and another azo compound, said

polymerization being initiated at an initial polymerization temperature of from 30° C. to 50° C.

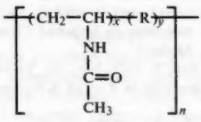
4,260,714

ACETAMIDOETHYLENE COPOLYMERS

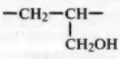
Robert E. Wingard, Jr., Palo Alto, and William J. Leonard, Jr., San Francisco, both of Calif., assignors to Dynapol, Palo Alto, Calif.

Filed May 18, 1979, Ser. No. 40,030
Int. Cl.³ C08F *220/54*
U.S. Cl. 526—271 **10 Claims**

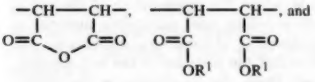
1. A copolymer consisting of randomly distributed repeating units represented by the formula

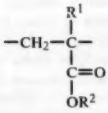


wherein R is the radical selected from the group



or the C_1 to C_6 carboxylic acid esters thereof





wherein R^1 is hydrogen or a C_1 to C_6 alkyl; R^2 is a C_1 to C_6 alkyl; x and y are numbers greater than zero totaling to 1.00, the ratio of x to y is from about 0.05:0.95 to about 0.95:0.05; and n is an integer from about 14 to about 10,000.

4,260,715

PROCESS FOR THE PRODUCTION OF SILICONFUNCTIONAL POLYORGANOSILOXANES

Armand de Montigny, Leverkusen, and Hans Niederprüm, Monheim, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 7, 1979, Ser. No. 101,317
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2855927
Int. Cl.³ C07F *7/08*
U.S. Cl. 556—453 **6 Claims**

1. In the production of linear and branched equilibrated acyloxy-containing organopolysiloxanes by reacting a chlorosilane of the formula

$$R_aR'_bSiCl_{(4-a-b)}$$

in which

a is 0,1,2 or 3,

b is 0,1,2 or 3, and

$a+b \leqq 3$,

or a partial hydrolysate thereof, with at least one organosiloxane containing the components

$R_2R''—SiO_{\frac{1}{2}}$,

$RR''—SiO_{}$,

$R''—SiO_{3/2}$ and

SiO_2

in which

R and R″ each independently is H or an optionally halogen- or cyano-substituted monovalent hydrocarbon radical having up to 12 carbon atoms, and

R″ is Cl, OH, H or an optionally halogen- or cyano-substituted monovalent hydrocarbon radical having up to 12 carbon atoms, in the presence of an equilibration catalyst, the improvement which comprises employing as the equilibration catalyst a salt of a fluorinated alkane sulphonic acid plus a monobasic carboxylic acid, the total number of Si—Cl groups exceeding the total number of Si—OH groups in the reactants and the monobasic carboxylic acid being present in at least about 1.1 times the molar amount of silicon-bound Cl atoms.

4,260,716

POLYMERIC QUATERNARY AMMONIUM HYDROXIDES AND THEIR USE IN COATING APPLICATIONS

Roger M. Christenson, Gibsonia; Joseph F. Bosso, Lower Burrell; Marvis E. Hartman, Pittsburgh, and Wen-Hsuan Chang, Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 873,634, Jan. 30, 1978, abandoned, which is a continuation-in-part of Ser. No. 744,532, Nov. 24, 1976, Pat. No. 4,081,341. This application May 7, 1979, Ser. No. 36,717
Int. Cl.³ C08G *18/58*
U.S. Cl. 528—45 **9 Claims**

1. A water-dispersible, curable, resinous coating composition in which the resinous commponent comprises an active hydrogen-containing quaternary ammonium hydroxide-containing polymer in combination with a blocked isocyanate curing agent, said quaternary ammonium hydroxide-containing polymer comprising the reaction product of:

(A) a polyglycidyl ether of a cyclic polyol;

(B) a tertiary amine;

sufficient water being present during the reaction of (A) and (B) for the formation of quaternary ammonium hydroxide groups without substantial advancement in molecular weight of the polymer, said quaternary ammonium hydroxide-containing polymer having a molecular weight of 1000 to 5000 and containing 0.05 to 6.0 milliequivalents of quaternary nitrogen base group per gram of polymer.

4,260,717

HIGH PERFORMANCE URETHANE COATING WHICH IS A SOLVENT SOLUTION OF A POLYESTER CONTAINING HYDROXYL GROUPS AND AN ALIPHATIC DIISOCYANATE

Wendell A. Ehrhart, 160 Schoolhouse La., Hellam, Pa. 17406

Filed Jan. 10, 1980, Ser. No. 111,100
Int. Cl.³ C08G *18/24*
U.S. Cl. 528—59 **6 Claims**

1. A liquid heat and moisture curable coating comprising a solvent solution of, based on 100 parts by weight reactants,

(a) 55 to 90 parts by weight of a polyester having an acid number of less than 3 and an average hydroxyl equivalent weight of about 750 to 1400, said polyester being formed from a mixture of dicarboxylic acids of which at least 75 weight percent is one or more of the isomeric benzene dicarboxylic acids and a mixture of polyols having a hydroxyl equivalent weight of less than about 130, at least 60 weight percent of said polyol mixture being 1,6-hexanediol or 1,5-pentanediol or mixtures thereof and 0 to 15

parts by weight of a polyol having a functionality greater than 2;

(b) 10 to 30 parts by weight of an aliphatic diisocyanate;

(c) 0 to 15 parts by weight of polyols having a hydroxyl equivalent weight of less than about 600; and

(d) an effective amount of an organotin catalyst

Wherein the ratio of NCO to OH groups is between 1.3 to 1 and 3.6 to 1 and wherein said solvent is substantially free from reactive hydrogen.

4,260,718

MODIFIED CARBODIIMIDE-CONTAINING POLYISOCYANATES AND GLASSY POLYURETHANES THEREFROM

William J. Farrissey, Jr., Northford; David J. Goldwasser, Cheshire, and Kemal B. Onder, New Haven, all of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Dec. 18, 1979, Ser. No. 104,796

Int. Cl.³ C07C *119/055, 127/22;* **C08G** *18/81*

U.S. Cl. 528—60 **8 Claims**

1. A liquid organic polyisocyanate composition comprising the product obtained by heating together at a temperature of from about 40° C. to about 105° C. a mixture comprising:

(a) a carbodiimide-containing organic polyisocyanate; and

(b) a carboxylic acid terminated butadiene-acrylonitrile copolymer characterized by a carboxylic acid functionality of from about 1.75 to about 2.5, a viscosity in centipoises at 27° C. of from about 55,000 to about 625,000, and an acrylonitrile content of from about 5 to about 30 percent by weight of said butadiene-acrylonitrile copolymer, and wherein said butadiene-acrylonitrile coplymer is employed in the proportions by weight of from about 2 to about 30 parts per 100 parts of said polyisocyanate provided there is from about 0.01 to about 0.5 carboxylic acid equivalent per equivalent of carbodiimide.

8. A glassy polyurethane polymer prepared by the reaction of a polyisocyanate composition in accordance with claim **1** and at least one organic polyhydric alcohol.

4,260,719

UV STABILIZED POLYCARBONATE RESINS

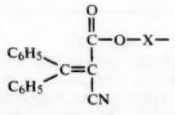
Ta-Yen Ching, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 17, 1980, Ser. No. 131,156

Int. Cl.³ C08G *63/62, 63/64*

U.S. Cl. 528—196 **5 Claims**

1. A UV-stable aromatic polycarbonate resin chain-stopped with a grouping having the formula



where X is a divalent saturated alkylene or alkylidene radical of the C_1–C_{10} series.

4,260,720

NOVEL MERCAPTO CHAIN EXTENDED PRODUCTS AND THEIR USE IN CATIONIC ELECTRODEPOSITION

Joseph F. Bosso, Lower Burrell; Richard M. Nugent, Allison Park, and Joseph E. Plasynski, Arnold, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 31, 1979, Ser. No. 90,166

Int. Cl.³ C08G *59/14;* **C08L** *63/00*

U.S. Cl. 528—109 **15 Claims**

1. A resinous binder suitable for use in cationic electrodeposition comprising the reaction product of:

(A) a polyepoxide having a 1,2-epoxy equivalency greater than one,

(B) a polymercapto compound, and

(C) an amine;

the equivalent ratio of mercapto groups in (B) to epoxide groups in (A) being less than one; said reaction product containing cationic groups which are derived from the organic amine.

4,260,721

MODIFIED FLUIDIZED BED

Leslie J. Ford, Warrington, and Derrick P. Barker, Northwich, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Sep. 5, 1979, Ser. No. 72,784

Claims priority, application United Kingdom, Sep. 6, 1978, 35814/78

Int. Cl.³ C08G *63/26*

U.S. Cl. 528—272 **7 Claims**

1. A process for causing a material to undergo one or more thermally-initiated chemical reactions or one or more physical changes in which the materail or at least a component thereof is in a solid particulate state and is maintained as a fluidised bed, the fluidising gas being supplied in two or more zones comprising at least one cooler zone in which the temperature of the gas is below a temperature at which said particulate material is susceptible to an undesirable thermal transformation and at least one hotter zone in which the temperature of the gas is above the temperature at which said particulate material is susceptible to the undesirable thermal transformation, the zones being arranged so that the particles of the bed are constantly moving between them, the dwell time in the cooler zone or zones being sufficiently long to allow chemical reaction(s) or physical change(s) to take place so that when the particles move into the hotter zone or zones the undesirable transformation does not take place, and optionally the dwell time in the hotter zone or zones being sufficiently short so that other undesirable transformation(s) does not take place before the particles move into the cooler zone or zones, the temperature of the zones being selected so as to cause the chemical reaction(s) or physical change(s) to take place.

4,260,722

PRODUCTION OF ETHYLENE COPOLYMERS

Klaus Pfleger; Wieland Zacher; Klaus Boettcher, all of Wesseling; Ronald Skorczyk, Bonn; Oskar Buechner, Dudenhofen, and Franz G. Mietzner, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 27, 1979, Ser. No. 97,838

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1978, 2854151

Int. Cl.³ C08F *2/02*

U.S. Cl. 526—68 **2 Claims**

1. A process for the continuous production of ethylene copolymers which contain up to 50 percent by weight of comonomers as copolymerized units by compressing a mixture of ethylene and a comonomer copolymerizable with ethylene stepwise in a pre-compressor and a post-compressor, copolymerizing the mixture in a polymerization zone under pressures of from 1,500 to 5,000 bar at from 150° to 350° C. in the presence of a free radical polymerization initiator, transferring the resulting reaction mixture into a high pressure product isolation zone which is under a pressure of from 100 to 500 bar and at from 150° to 250° C., then into a downstream low pressure

product isolation zone, which is under a pressure of from 1 to 10 bar and at from 150° to 250° C., and thereafter into a discharge extruder, and recycling the greater part of the unconverted gas, consisting of ethylene and comonomer, from the high pressure product isolation zone and the low pressure product isolation zone into the polymerization process, whilst passing a small part of the unconverted gas into a low temperature isolation zone, in which process a small part of the gas recycled from the high pressure product isolation zone is passed into the low temperature isolation zone from where it is removed from the process as an off-gas and all the gas taken off the low pressure product isolation zone is fed to the pre-compressor.

4,260,723

METHOD FOR PRODUCING OLEFIN POLYMERS

Masato Harada, Kisarazushi; Yoshikatsu Ishigaki, Ichiharashi; Sadahiko Yamada, Ichiharashi; Atsushi Suzuki, Ichiharashi; Jun Masuda, Ichiharashi; Tadamitsu Hamazaki, Ichiharashi; Toshiaki Yoshida, Ichiharashi, and Kiyoto Fukuda, Ichiharashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Jun. 25, 1979, Ser. No. 51,797

Claims priority, application Japan, Jun. 27, 1978, 53-77777; Jul. 13, 1978, 53-85419

Int. Cl.[3] **C08F** *4/02, 10/00*

U.S. Cl. 526—115 **9 Claims**

1. In a method for producing α-olefin polymers by homopolymerization or copolymerization of α-olefins in the presence of a catalyst obtained by combining a solid product (III) with an organoaluminum compound, the improvement which comprises employing as said solid product (III) a material obtained by

(a) obtaining a solid product (I) by reacting

(1) a trivalent metal halide selected from the group consisting of anhydrous aluminum chloride and anhydrous ferric chloride, with

(2) a divalent metal hydroxide, oxide, carbonate or a composite compound containing a divalent metal hydroxide, oxide or carbonate or a hydrate of a divalent metal compound,

(b) obtaining a solid product (II) by reacting

(1) said solid product (I) with

(2) a transition metal compound selected from the group consisting of halides, oxyhalides, alcoholates, alkoxyhalides and acetoxyhalides of a transition metal selected from the group consisting of titanium and vanadium

said reaction being carried out in the presence of a polysiloxane,

said reaction being carried out by mixing said solid product (I), said transition metal compound and said polysiloxane and then heating the mixture at 50° C. to 300° C.,

(c) reacting said solid product (II) with at least two kinds of transition metal compounds consisting of

(1) at least one halogen-containing transition metal compound selected from the group consisting of the halides, oxyhalides, alkoxyhalides and acetoxyhalides of titanium or vanadium and

(2) at least one halogen-free transition metal compound selected from the group consisting of tetraalkyl orthotitanates, vanadyl trialcoholates and polytitanic acid esters expressed by the general formula

$$RO—Ti(OR)_2O]_mR$$

wherein m is an integer of 2 or more and the Rs are the same or different kinds of alkyl groups, aryl groups or aralkyl groups.

4,260,724

PREPARATION OF POLYMALEIC ACIDS FROM MALEIC ANHYDRIDE IN THE PRESENCE OF ACETIC ANHYDRIDE AND OF HYDROGEN PEROXIDE

Johannes Perner, Neustadt; Karl Stork, Lampertheim, and Knut Oppenlaender, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 31, 1979, Ser. No. 71,479

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1978, 2840167

Int. Cl.[3] **C08F** *4/30, 34/02, 122/04, 222/04*

U.S. Cl. 526—229 **8 Claims**

1. In a one-step process for the preparation of a polymaleic acid having a molecular weight of from 200 to 1,500, wherein maleic anhydride is polymerized in the presence of hydrogen peroxide and acetic anhydride and the resulting polymaleic anhydride is hydrolyzed, the improvement which comprises:

dissolving the maleic anhydride to be polymerized in from 1 to 5 moles of acetic anhydride per mole of maleic anhydride;

adding to the maleic anhydride solution from 0.2 to 0.5 mole of hydrogen peroxide per mole of maleic anhydride while at the same time heating the reaction batch to from 80°–140° C., whereupon the polymerization and simultaneous hydrolysis is completed at 100°–140° C., and thereafter isolating the polymaleic acid.

4,260,725

HYDROPHILIC CONTACT LENS MADE FROM POLYSILOXANES WHICH ARE THERMALLY BONDED TO POLYMERIZABLE GROUPS AND WHICH CONTAIN HYDROPHILIC SIDECHAINS

Philip L. Keogh, Pittsford; Jay F. Kunzler, Canadaigua, both of N.Y., and Gregory C. C. Niu, Lexington, Mass., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Dec. 10, 1979, Ser. No. 102,009

Int. Cl.[3] **C08F** *30/08*

U.S. Cl. 526—279 **29 Claims**

1. A water absorbing, soft, hydrophilic, flexible, hydrolytically stable, biologically inert contact lens with the capability of transporting oxygen sufficiently to meet the requirements of the human cornea comprising a polysiloxane which is α,ω terminally bonded through divalent hydrocarbon groups to polymerizable activated unsaturated groups and which contain hydrophilic sidechains is disclosed.

4,260,726

THERMOSETTING ORGANOPOLYSILOXANE COMPOSITIONS

Bernward Deubzer, Burghausen, Fed. Rep. of Germany, and Erich Brunner, Gmunden, Austria, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed May 18, 1979, Ser. No. 40,342

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1978, 2824630

Int. Cl.[3] **C08G** *77/06*

U.S. Cl. 528—15 **4 Claims**

1. A thermosetting organopolysiloxane composition comprising (1) an organosilicon compound having on the average at least two Si-bonded hydrogen atoms per molecule (2) an organosilicon compound containing on the average at least two monovalent hydrocarbon radicals per molecule having aliphatic multiple bonds, (3) a catalyst which promotes the addition of Si-bonded hydrogen to the aliphatic multiple bonds and (4) an organic compound which inhibits curing at room temperature selected from the group consisting of 2-mercaptobenzothiazole, zinc benzothiazylsulfide, dibenzothiazyl disulfide, benzothiazyl-2-N,N-diethylsulfenamide, benzothiazyl-2-N-cyclohexylsulfenamide, benzothiazyl-2-N,N-diisopropylsulfenamide, dithiocarbamic acid, N,N-dimethyldithiocarbamic acid, piperidine-N-pentamethylenedithiocarbamate, zinc-N,N-dibenzyldithiocarbamate, bismuth-N,N-dimethyldi-

thiocarbamate, tellurium-N,N-diethyldithiocarbamate, zinc-N,N-di-n-butyldithiocarbamate, zinc-N,N-dimethyldithiocarbamate, lead di-N,N-methyldithiocarbamate, N,N-tetramethyldithiocarbamylsulfenamide, dithiocarbamylsulfenamide, tetramethylthiuram monosulfide, tetra-n-octadecylthiuram monosulfide, di-N-pentamethylenethiuram monosulfide, tetramethylthiuram disulfide, tetra-n-butylthiuram disulfide and di-N-pentamethylene thiuram tetrasulfide.

4,260,727
EPOXY-AMINE ADDUCTS FOR USE IN ELECTRODEPOSITION

Don E. Floyd, Robbinsdale, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Filed Jul. 23, 1979, Ser. No. 59,933
Int. Cl.[3] C08G *59/50*
U.S. Cl. 528—45 **9 Claims**

1. The reaction product of:

(a) A difunctional epoxy compound having an average molecular weight of from about 342 to about 2,000; and,

(b) A primary mono amine having from about 8 to 18 carbon atoms

such that the combined molecular weight of (a) and (b) is from about 830 to about 5,600 in a mole ratio of the epoxy compound to the primary amine of from about 1.8:3 to about 2.4:3 respectively.

4,260,728
PREPARATION OF NONCELLULAR POLYURETHANE COMPOSITIONS

Richard J. Turley, Orange, and David R. MacFarland, Cheshire, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed May 5, 1980, Ser. No. 146,829
Int. Cl.[3] C08G *18/50, 18/62*
U.S. Cl. 528—57 **14 Claims**

1. A process for preparing a noncellular polyurethane which comprises reacting an organic polyisocyanate with a chlorine-containing polyol having an average of 2–8 hydroxy groups and at least one (2,2-dichlorovinyl) ethylene group in the polyol chain, said reaction being carried out in the presence of a catalytic amount of a metal carboxylate compound selected from the group consisting of an alkali metal salt of a carboxylic acid, an alkaline earth metal salt of a carboxylic acid and mixtures thereof.

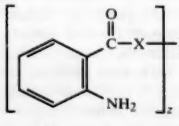
4,260,729
POLYUREA POLYMERS FORMED FROM POLYETHERS HAVING TERMINAL AMINO GROUPS

Oskar Schmidt, Kittsee, and Walter Sibral, Tulln, both of Austria, assignors to Lim-Holding S.A., Luxembourg

Continuation-in-part of Ser. No. 9,640, Feb. 5, 1979, which is a division of Ser. No. 735,281, Oct. 26, 1976, Pat. No. 4,153,801. This application Jan. 3, 1980, Ser. No. 109,749
Int. Cl.[3] C08G *18/32, 18/38;* **C07D** *233/54;* **B60C** *1/00*
U.S. Cl. 528—68 **26 Claims**

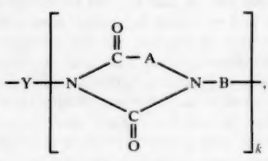
1. A polymer produced according to the isocyanate polyaddition process by reacting a compound having terminal amino groups, said compound being of the formula

(I)

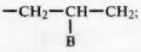


wherein z is 2 or 3, X is oxygen or sulfur and R is a z-valent group of the formula

(II)



wherein k is 1 or 2, A is alkylidene or alkylated or non-alkylated vinylene, Y is B when k=1 and z=2; when k=2 and z=2, then Y is —CH_2—; and when k=2 and z=3, then Y is



and B in each case represents a divalent polyalkylene ether group or a polyalkylene thioether group such as it is obtained by removal of the hydroxyl or mercapto groups from a polyalkylen ether diol or a polyalkylene thiother dithiol of a molecular weight of 100 to 15000, with a polyisocyanate.

25. A vehicle tire formed from the plastic material defined in claim **1**.

4,260,730
PREPARATION OF BISPHENOL-FORMALDEHYDE ETHERS USING NITRIC ACID

Kazys Sekmakas, Palatine, and Thomas H. Plaisance, Wilmette, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 5,192, Jan. 22, 1979, abandoned. This application Jan. 3, 1980, Ser. No. 109,215
Int. Cl.[3] C08G *2/34*
U.S. Cl. 528—145 **14 Claims**

1. A method for the production of bisphenol-formaldehyde ethers comprising reacting a bisphenol with at least 2 moles of formaldehyde per mol of said bisphenol, the reaction being carried out in solution in alcohol in the presence of an alkali metal hydroxide to provide a polymethylol derivative of said bisphenol, adding nitric acid to precipitate said hydroxide, and then heat reacting said polymethylol derivative alcohol solution at an acid pH while removing water of etherification.

4,260,731
AROMATIC POLYESTER-POLYCARBONATE

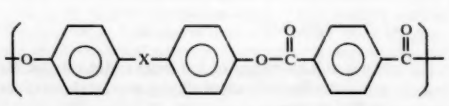
Hajime Mori; Katsuhisa Kohyama; Katsuhiko Nakamura, all of Kitakyushu, and Katsuyuki Sakata, Nakama, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Filed Aug. 20, 1979, Ser. No. 68,067
Claims priority, application Japan, Sep. 11, 1978, 53/111518; Sep. 22, 1978, 53/117232
Int. Cl.[3] C08G *63/64*
U.S. Cl. 528—173 **8 Claims**

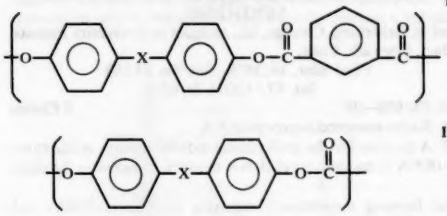
1. An aromatic polyester-polycarbonate resin having a glass transition point ranging from 160° C. to 190° C. and having a terminal carboxyl group content of not more than 10μ equivalents/g of resin, comprising:

a polymer material composed of repeating units of structures I–III:

I



-continued



wherein X is a divalent organic radical and the divalent aromatic entities in structures in I, II and III may be substituted by hydrocarbon substituents and wherein the molar proportion of dihydroxy-diaryl units to benzene dicarboxylic acid units to carbonate units ranges from 1:0.33–0.75:0.67–0.25 with the molar ratio of the terephthalic acid units to isophthalic acid units of said benzene dicarboxylic acid units ranging from 9:1 to 2:8, said terephthalic acid units and said isophthalic acid units being formed in said polymer material by the presence of a terephthaloyl chloride compound selected from the group consisting of terephthaloyl chloride, methyl terephthaloyl chloride and 2,5-dimethyl terephthaloyl chloride and an isophthaloyl chloride compound selected from the goup consisting of isophthaloyl chloride and 2-methylisophthaloyl chloride in the reacting monomers which form said polymer material.

4,260,732

UV STABILIZED POLYCARBONATE RESINS

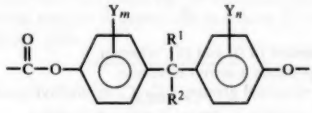
Ta-Yen Ching, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 22, 1980, Ser. No. 123,667

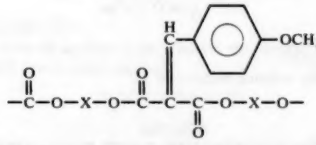
Int. Cl.³ C08G *63/64*

U.S. Cl. 528—192 **7 Claims**

1. An aryl polycarbonate resin having good stability to UV light where the said resin comprises aryl carbonate units of the formula,



and formate units of the formula,



where the Y's are independently selected from the class consisting of hydrogen, alkyl groups containing from 1 to 3 carbon atoms, R^1 and R^2 are independently selected from the class consisting of hydrogen, alkyl radicals of from 1 to 3 carbon atoms, and phenyl radical, X is a divalent saturated C_2–C_{10} alkylene radical, and m and n are integers of from 1 to 2, inclusive, where the molar concentration of the formate unit ranges from 0.1 to 25 mol percent, based on the total molar concentration of the two aforesaid units.

4,260,733

METHOD FOR MAKING AROMATIC POLYFORMALS

George R. Loucks, and Frank J. Williams, III, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 23, 1978, Ser. No. 889,397

Int. Cl.³ C08G *65/40*

U.S. Cl. 528—219 **10 Claims**

1. A method for making a film forming aromatic polyformal consisting essentially of chemically combined units of the formula,

$$-OROCH_2-,$$

which is substantially free of aromatic polyformal in the cyclic state which comprises

(A) agitating a mixture containing as essential ingredients bisphenol of the formula,

$$HO-R-OH,$$

methylene halide, alkali metal hydroxide and a member selected from a phase transfer catalyst and dipolar aprotic solvent, where there is utilized in the reaction mixture, per mole of bisphenol, more than 1 mole of methylene halide and greater than 2 moles of alkali metal hydroxide,

(B) diluting the resulting mixture of (A) with an inert organic solvent,

(C) effecting the separation of solids from the resulting solution of (B)

(D) while agitating the solution of (C), adding an antisolvent to the solution of (C), to effect the precipitation of aromatic polyformal, and

(E) effecting the recovery of aromatic polyformal solids from (D) by a solid-liquid separation,

where R is a $C_{(6-30)}$ divalent aromatic radical.

4,260,734

MODIFIED FLUIDIZED BED

Nicholas W. R. Anderton, Runcorn; Leslie J. Ford, Warrington; Frank A. Kirk, York, and Raymond Oliver, Runcorn, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Sep. 5, 1979, Ser. No. 72,785

Claims priority, application United Kingdom, Sep. 6, 1978, 35814/78

Int. Cl.³ C08G *63/26*

U.S. Cl. 528—272 **9 Claims**

1. A process for causing a material to undergo one or more thermally-initiated chemical reactions or one or more physical changes in which the material or at least a component thereof is in a solid particulate state and is maintained as a fluidised bed, the fluidising gas being supplied in two or more zones comprising at least one cooler zone in which the temperature of the gas is below a temperature at which said particulate material is susceptible to an undesirable thermal transformation and at least one hotter zone in which the temperature of the gas is above the temperature at which said particulate material is susceptible to the undesirable thermal transformation, the zones being arranged so that the particles of the bed are constantly moving between them, the dwell time in the hotter zone or zones being sufficiently short so that the undesirable transformation does not take place before the particles move into the cooler zone or zones, the temperature of the said zones being selected so as to cause the chemical reaction(s) or physical change(s) to take place.

8. A process as claimed in any one of the preceding claims wherein the bed material is a low molecular weight poly(ethylene terephthalate) "pre-polymer" (as hereinbefore defined) and wherein said pre-polymer is further polymerised by heating.

4,260,735

CATALYTIC PROCESS FOR PREPARATION OF POLYESTERS

John A. Bander, Richmond; Stanley D. Lazarus, Petersburg, and Ian C. Twilley, Chester, all of Va., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Feb. 12, 1980, Ser. No. 120,804
Int. Cl.[3] C08G 63/34
U.S. Cl. 528—279 7 Claims

1. In the method of polymerization, in the melt, of an aromatic polycarboxylic acid or anhydride with a glycol using titanium compound catalysts to form high molecular weight linear polymers, the improvement comprising

(a) esterifying the acid or anhydride with the glycol in the pressure of from about 5 ppm of Ti to about 100 ppm of Ti as an alkanolamine titanium chelate catalyst at a temperature of between about 197° C. and about 300° C. for a period of from about 0.5 hour to about 7 hours at a pressure of between about 0 psig and about 100 psig at a molar ratio of glycol to acid or anhydride of about 1.1:1 to about 3:1,

(b) further esterifying and polycondensing the product of step (a) in contact with said catalyst at a temperature of from about 270° C. to about 290° C., under vacuum of from about 0.1 Torr to about 100 Torr for a period of from about 0.5 hour to about 7 hours, while removing the products of condensation, so that the resulting polymer has an intrinsic viscosity between about 0.4 and about 1.2 and contains less than 5 percent by weight diethylene glycol, without adding a diethylene glycol inhibitor.

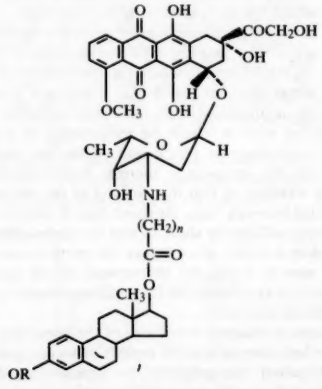
4,260,736

STEROID HORMONE-ANTITUMOR DERIVATIVES

Kiro Asano; Humio Tamura, both of Kukizaki; Hiromitsu Tanaka, Tokyo, and Satoru Enomotol, Fujisawa, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 1, 1979, Ser. No. 62,819
Claims priority, application Japan, Aug. 14, 1978, 53-98796; Aug. 14, 1978, 53-98797; Aug. 14, 1978, 53-98798; Aug. 14, 1978, 53-98799; Sep. 4, 1978, 53-108290; Dec. 8, 1978, 53-152176; Dec. 14, 1978, 53-154842; May 29, 1979, 54-66496
Int. Cl.[3] C07J 43/00, 41/00
U.S. Cl. 536—5 5 Claims

1. A compound of the formula:



wherein R is hydrogen or acyl and n is an integer of 1 to 3.

4,260,737

RADIOIODINE LABELING DURING PROTEIN SYNTHESIS

Neal H. Scherberg, Chicago, Ill., assignor to University Patents, Inc., Norwalk, Conn.

Filed Mar. 16, 1979, Ser. No. 21,103
Int. Cl.[3] C07H 21/02
U.S. Cl. 536—28 9 Claims

1. Radio-monoiodo-tyrosyl-tRNA.

7. A process for the preferential radioiodination of the tyrosyl-tRNA in an aminoacyl-tRNA mixture comprising the steps of:

(a) forming a mixture comprising aminoacyl-tRNAs and sodium radioiodine in a buffered solution;

(b) adding Chloramine-T to initiate the radioiodination reaction;

(c) incubating the mixture at ambient temperature for a time sufficient to essentially complete radioiodination of tyrosyl-tRNA; and

(d) isolating radioiodotyrosyl-tRNA from the reaction mixture.

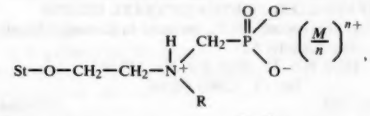
4,260,738

NOVEL STARCH ETHER DERIVATIVES, A METHOD FOR THE PREPARATION THEREOF

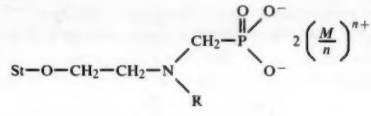
Martin M. Tessler, Edison, N.J., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 66,526, Mar. 15, 1979. This application Jan. 10, 1980, Ser. No. 110,926
Int. Cl.[3] C08B 31/08, 31/10, 31/14; D21H 3/28
U.S. Cl. 536—49 19 Claims

1. As a composition of matter, a starch ether derivative of the general structure



(i)

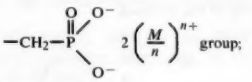


(ii)

or a combination of (i) and (ii), wherein

St—O represents a starch molecule,

R is a C_1–C_6 alkyl groups, a C_3–C_6 cycloalkyl group, or a



group;

M is a cation;

and n is the valence number of M.

4,260,739

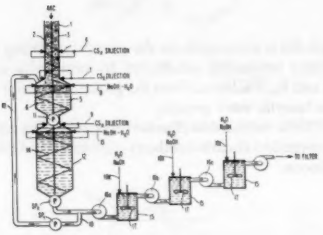
PROCESS AND APPARATUS FOR PREPARING A HOMOGENEOUS SOLUTION OF XANTHATED ALKALI CELLULOSE

Charles J. Geyer, Jr, Berwyn, and Ben E. White, Wayne, both of Pa., assignors to Fiber Associates, Inc., Berwyn, Pa.

Division of Ser. No. 769,179, Feb. 16, 1977, Pat. No. 4,158,698, which is a division of Ser. No. 610,419, Sep. 4, 1975, Pat. No. 4,037,039. This application May 11, 1979, Ser. No. 38,068
Int. Cl.[3] B01F 3/10, 7/16; C08B 9/02, 9/04
U.S. Cl. 536—61 2 Claims

1. In a process for treating a substantially completely xan-

thated alkali cellulose solution so as to form a homogeneous solution thereof with an alkali hydroxide solution, the improvement which comprises continuously passing a substan-



tially completely xanthated alkali cellulose solution through a series of separate attrition and mixing stages and partially diluting said solution during each mixing stage.

4,260,740

CARBOXYLATED CELLULOSE ION-EXCHANGE MATERIALS

Roy Carrington, Margate, and Michael C. Hall, Stodmarsh, Nr. Canterbury, both of England, assignors to Pfizer Inc., New York, N.Y.

Filed Oct. 10, 1979, Ser. No. 83,355

Claims priority, application United Kingdom, Oct. 11, 1978, 40145/78

Int. Cl.[3] **B01D** *39/00;* **B01J** *39/00;* **C02F** *1/42;* **C08B** *3/12*

U.S. Cl. 536—63 **15 Claims**

1. A process for the preparation of a carboxylated cellulose ion exchange material which comprises the steps of

(a) heating a mixture of cellulose and a polycarboxylic acid selected from the group consisting of citric, isocitric and aconitic acid, said mixture containing from about 30 to 70 percent by weight of said acid, at a temperature of from about 100° to 160° C. while removing water therefrom until the cellulose has reacted with at least 20 percent of its own weight of acid; and

(b) treating the product with an excess of aqueous alkali at a pH of from 8 to 11 until the ion exchange capacity of the material relative to cupric ions is at least 1.5 milliequivalents per gram.

4,260,741

LOW-DENSITY XANTHAN GUMS

Harry R. Schuppner, Jr., El Cajon, Calif., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 22, 1979, Ser. No. 51,319

Int. Cl.[3] **C08B** *37/00*

U.S. Cl. 536—114 **9 Claims**

1. A form of xanthan gum wherein the retained liquid is at least 84% lower alkyl alcohol.

4,260,742

METHINE DYES FROM TETRAHYDROQUINOLINE COMPOUNDS CONTAINING N-THIOETHER SUBSTITUENTS

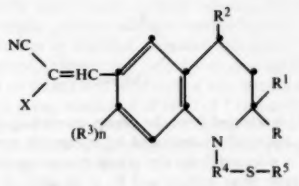
Clarence A. Coates, Jr., and Max A. Weaver, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 802,090, May 31, 1977, Pat. No. 4,161,601. This application Apr. 4, 1979, Ser. No. 26,846

Int. Cl.[3] **C07D** *417/14*

U.S. Cl. 542—427 **2 Claims**

1. Compounds of the formula:



wherein X is selected from cyano, carbamoyl, lower alkyl carbamoyl, lower alkoxycarbonyl, lower alkylsulfonyl and phenyl sulfonyl wherein the benzene ring may be substituted with any of halogen, lower alkyl, and lower alkoxy; R, R^1, and R^2 are independently selected from hydrogen and lower alkyl; R^3 is selected from hydrogen, lower alkyl, lower alkoxy and halogen and n is 0, 1 or 2; R^4 is lower alkylene; R^5 is selected from phenyl, benzyl, and phenylethyl wherein each benzene ring may be substituted with any of halogen, lower alkyl and lower alkoxy.

4,260,743

PREPARATION OF β-LACTAMS AND INTERMEDIATES THEREFOR

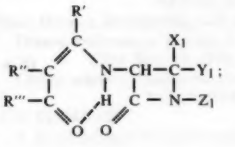
Ajay K. Bose, Mountain Lakes, N.J., assignor to Gist-Brocades N.V., Delft, Netherlands

Continuation-in-part of Ser. No. 969,207, Dec. 13, 1978, abandoned. This application Dec. 31, 1979, Ser. No. 108,669

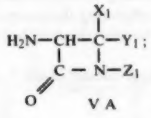
Int. Cl.[3] **C07D** *487/04*

U.S. Cl. 542—442 **24 Claims**

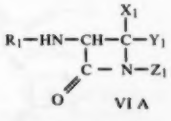
1. Process for the preparation of β-lactams of the formulae:



IV A

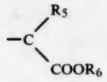


V A

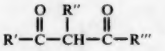


VI A

wherein R′ is selected from the group consisting of lower alkyl, aryl and aryl(lower alkyl), R″ is selected from the group consisting of hydrogen and lower alkyl or R′ and R″ together with the carbon atoms to which they are attached are lower cycloalkyl and R‴ is selected from the group consisting of lower alkyl and —OR, wherein R is lower alkyl, Y_1 is selected from the group consisting of hydrgen, furyl, phenyl, optionally substituted by methoxy or dimethylamino, styryl, optionally esterified carboxy and hydroxymethylene, X_1 is slected from the group consisting of hydrogen and methylthio or X_1 together with Y_1 is 1,5-pentylene, Z_1 is selected from the group consisting of hydrogen, methyl optionally substituted by phenyl and phenyl optionally substituted with at least one member of the group consisting of halogen, methyl, methoxy, methylthio and dimethylamino, or Z_1 is

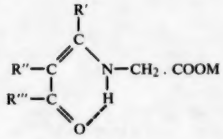


wherein R_5 is selected from the group, consisting of ethyl and ethylidene optionally substituted by optionally esterified hydroxy, R_6 is selected from the group consisting of hydrogen and carboxylic ester groups and R_1 is an acyl of an organic carboxylic acid of 1 to 8 carbon atoms, comprising reacting an 1,3-dicarbonyl compound of the formula:



I A

with glycine in the presence of a base MOH, wherein M is an alkali metal to form a vinylamino salt of the formula:



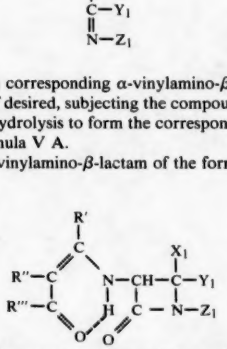
II A

activating the carboxyl group of the compound obtained with an activating agent selected from the group consisting of lower alkyl haloformate esters, di(lower alkyl) and diaryl phosphochloridates and cyanuric chloride, and reacting the activated compound in the presence of a tertiary base with an imino of the formula:

III A

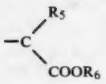
to form the corresponding α-vinylamino-β-lactam of formula IV A and if desired, subjecting the compound thus obtained to mild acid hydrolysis to form the corresponding α-amino-β-lactam of formula V A.

9. An α-vinylamino-β-lactam of the formula:



IV A

wherein R′ represents lower alkyl or phenyl, R″represents hydrogen or lower alkyl or R′ and R″ togehter with the carbon atoms to which they are attached represent lower cycloalkyl, R‴ represents lower alkyl or a group —OR, wherein R represents lower alkyl, Y_1 is selected from the group consisting of hydrogen, furyl, phenyl optionally substituted by methoxy or dimethylamino, styryl, optionally esterified carboxyl and hydroxymethylene, X_1 is selected from the group consisting of hydrogen and methylthio or X_1 together with Y_1 is 1,5-pentylene, Z_1 is selected from the group consisting of hydrogen methyl optionally substituted by phenyl and phenyl optionally substituted with at least one member of the group consisting of halogen, methyl, methoxy, methylthio and dimethylamino, or Z_1 is



wherein R_5 is selected from the group consisting of ethyl and ethylidene optionally substituted by optionally esterified hydroxy and R_6 is selected from the group consisting of hydrogen and carboxylic ester groups.

10. The α-vinylamino-βlactam according to claim **9**, 1-vertatyl-3-(α-methyl-β-carbomethoxy-vinylamino)-4-(β-styryl)-2-azetidinone.

4,260,744

PHARMACOLOGICALLY ACTIVE COMPOUNDS

Graham J. Durant, Welwyn Garden City; John C. Emmett, Codicote, and Charon R. Ganellin, Welwyn Garden City, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

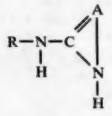
Division of Ser. No. 778,812, Mar. 17, 1977, Pat. No. 4,153,793, which is a division of Ser. No. 619,724, Oct. 6, 1975, Pat. No. 4,035,374, which is a division of Ser. No. 463,647, Apr. 24, 1974, Pat. No. 3,932,644. This application Jan. 30, 1979, Ser. No. 7,755

Claims priority, application United Kingdom, May 3, 1973, 21063/73; Jul. 26, 1973, 35551/73

Int. Cl.[3] **C07D** *285/18, 285/24*

U.S. Cl. 544—8 **5 Claims**

1. A compound of the formula:



wherein A taken together with the nitrogen and carbon atoms shown forms a 1,2,4-benzothiadiazine-1,1-dioxide or 1,2,4-thiadiazine-1,1-dioxide ring, said ring optionally substituted by one or two lower alkyl, phenyl or benzyl groups; R is a grouping of the formula:

$$Het—CH_2Z(CH_2)_n—$$

wherein Het is an imidazole ring, said ring being optionally substituted by lower alkyl, amino, hydroxy or halogen; Z is sulphur or a methylene group and n is 2 or 3 or a pharmaceutically acceptable acid addition salt thereof.

4,260,745

3-HALO CEPHALOSPORINS

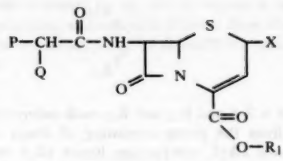
Robert R. Chauvette, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 784,770, Apr. 5, 1977, Pat. No. 4,208,515, which is a division of Ser. No. 656,240, Feb. 9, 1976, Pat. No. 4,064,343, which is a division of Ser. No. 457,150, Apr. 1, 1974, Pat. No. 3,962,327, which is a continuation-in-part of Ser. No. 335,414, Feb. 23, 1973, abandoned. This application Oct. 12, 1979, Ser. No. 84,229

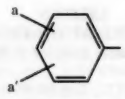
Int. Cl.[3] **C07D** *501/20*

U.S. Cl. 544—16 **9 Claims**

1. The compound of the formula



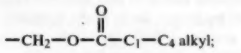
wherein P is 2-thienyl, 3-thienyl, phenyl, or a substituted phenyl group of the formula



wherein a and a' independently are hydrogen, C_1-C_4 alkyl, C_1-C_4 alkoxy, halogen, hydroxy, nitro, amino, or carboxy;

Q is hydroxy, formyloxy, acetoxy, carboxy, or sulfo;

R_1 is hydrogen, benzyl, p-methoxybenzyl, p-nitrobenzyl, diphenylmethyl, 2,2,2-trichloroethyl, t-butyl, or a pharmaceutically acceptable ester of the formula



X is fluoro, chloro, bromo, or iodo; and when R_1 is hydrogen, the non-toxic pharmaceutically acceptable salts thereof.

4,260,746

CHEMICAL INTERMEDIATES USEFUL TO PREPARE CEPHALOSPORINS

Andrew W. Taylor, Dorking; George Burton, Sutton, and John P. Clayton, Horsham, all of England, assignors to Beecham Group Limited, England

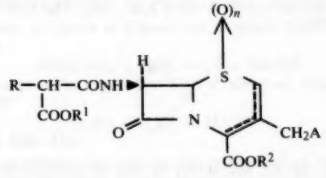
Division of Ser. No. 810,330, Jun. 27, 1977, Pat. No. 4,202,973. This application Oct. 15, 1979, Ser. No. 85,039

Claims priority, application United Kingdom, Jun. 26, 1976, 26684/76

Int. Cl.³ C07D *501/20, 501/36, 501/04*

U.S. Cl. 544—021 **15 Claims**

1. The process which comprises reacting a 7-acylaminocephalosporin of the formula:



wherein

R is furyl, thienyl, cycloalkyl of 3 to 7 carbon atoms cycloalkenyl of 3 to 7 carbon atoms, phenyl or phenyl substituted with from 1 to 3 members selected from the group consisting of hydroxy, halo, nitro, alkyl of 1 to 6 carbon atoms, amino and carboxy;

R^1 is alkyl of 1 to 6 carbon atoms, benzyl, phthalidyl, indanyl, phenyl, or phenyl substituted with from 1 to 3 alkyl groups of 1 to 6 carbon atoms;

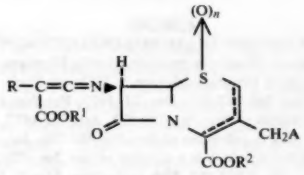
R^2 is hydrogen an in vivo hydrolysable ester group selected from the group consisting of acyloxyalkyl, alkoxycarbonloxyalkyl, lactone, thiolactone and dithiolactone or a chemically hydrolysable carboxy blocking group;

A is hydrogen, pyridyl, acetoxy, carbamoyloxy, or S-Het wherein Het is diazolyl, triazolyl, tetrazolyl, thiazolyl, thiadiazolyl, thiatriazolyl, oxazolyl or oxadiazolyl, unsubstituted or substituted with one or two members selected from the group consisting of alkyl of 1 to 6 carbon atoms, alkenyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, alkoxyalkyl, carboxyalkyl, carbamoyl, carbamoylmethyl, trifluoromethyl, hydroxy and halo;

n is zero or 1; and

the dotted line represents a double bond at either the 2- or 3-position,

with an acid halide, thereby forming a ketenimine of the formula:



wherein R, R^1, R^2, A and n and the dotted line are as herein defined.

4,260,747

NOVEL OXIMES

Rene Heymes, Romainville, and Andre Lutz, Strasbourg, both of France, assignors to Roussel Uclaf, Paris, France

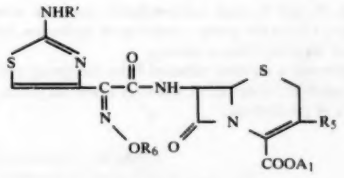
Filed Nov. 29, 1978, Ser. No. 964,517

Claims priority, application France, Dec. 5, 1977, 77 36513

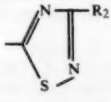
Int. Cl.³ C07D *501/56*

U.S. Cl. 544—27 **3 Claims**

1. A compound of the formula



in the syn form wherein R_5 is $—CH_2—S—R_1$ where R_1 is selected from the group consisting of 2-methyl-1,3,4-thiadiazolyl, 1-methyl tetrazolyl and



and R_2 is selected from the group consisting of alkyl and alkoxy of 1 to 4 carbon atoms, R' is selected from the group consisting of chloroacetyl and a group easily removable by acid hydrolysis or hydrogenolysis, A_1 is selected from the group consisting of hydrogen, diethylamine and an ester group easily removable by acid hydrolysis or hydrogenolysis and R_6 is 1-methyl-1-methoxyethyl.

4,260,748

MORPHOLINE FROM BIS (CYANOMETHYL) ETHER

Dale D. Dixon, Kutztown, and Randall J. Daughenbaugh, Barto, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Mar. 7, 1980, Ser. No. 128,073
Int. Cl.[3] C07D 295/02
U.S. Cl. 544—106 4 Claims

1. A process for producing morpholine which comprises: hydrogenating bis (cyanomethyl) ether in the presence of a hydrogenation catalyst, whereby cyclization of the ether to the heterocyclic amine is achieved.

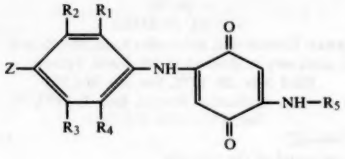
4,260,749

QUATERNARY DIAMINOBENZOQUINONES

Andree Bugaut, Boulogne-sur-Seine, and Monique Laudon, Gagny, both of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 862,827, Dec. 21, 1977, Pat. No. 4,204,059, which is a division of Ser. No. 762,272, Jan. 25, 1977, Pat. No. 4,084,052, which is a division of Ser. No. 600,786, Jul. 31, 1975, Pat. No. 4,023,926, which is a division of Ser. No. 370,737, Jun. 18, 1973, Pat. No. 3,919,265. This application May 9, 1980, Ser. No. 148,576
Claims priority, application Luxembourg, Jun. 21, 1972, 65555; Jan. 23, 1973, 66883
Int. Cl.[3] C07D 295/10; C07C 97/20
U.S. Cl. 544—166 9 Claims

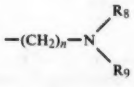
1. A quaternary ammonium salt of a diaminobenzoquinone of the formula



wherein

R_1, R_2, R_3 and R_4 each independently represent a member selected from the group consisting of hydrogen, halogen, lower alkyl and lower alkoxy;

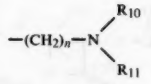
R_5 represents a member selected from the group consisting of hydrogen, lower alkyl, hydroxy lower alkyl and amino alkyl of the formula



wherein n is 2–6 and R_8 and R_9 each independently represent a member selected from the group consisting of hydrogen, lower alkyl and hydroxy lower alkyl; and

Z is

wherein R_6 and R_7 each independently are selected from the group consisting of lower alkyl, hydroxy lower alkyl, carbamyl lower alkyl, acetylamino lower alkyl, mesylamino lower alkyl, benzoylamino lower alkyl and



wherein n is 2–6 and R_{10} and R_{11} each independently are selected from the group consisting of lower alkyl, hydroxy lower alkyl, acetylamino lower alkyl or R_{10} and R_{11} together with the nitrogen atom to which they are attached form a heterocycle selected from the group consisting of morpholinyl and piperidinyl.

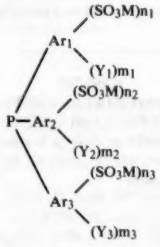
4,260,750

TELOMERIZATION PROCESS

Emile Kuntz, Lyons, France, assignor to Rhone-Poulenc Industries, Paris, France

Division of Ser. No. 926,127, Jul. 19, 1978, Pat. No. 4,219,677, which is a division of Ser. No. 817,800, Jul. 21, 1977, Pat. No. 4,142,060. This application Mar. 13, 1980, Ser. No. 129,910
Int. Cl.[3] C07D 295/02; C07C 67/04
U.S. Cl. 544—178 44 Claims

1. A process for telomerizing dienes which comprises the step of reacting a diene with a telomerizing compound, said telomerizing agent being selected from the group consisting of a carboxylic acid, an amine, a silanol, a compound containing a reactive methylene function and nitromethane, containing at least one mobile hydrogen atom in the presence of a water-soluble catalytic system comprising at least one water-soluble phosphine having the following formula (I):



wherein Ar_1, Ar_2 and Ar_3 each represent an aryl group having from 6 to 10 carbon atoms, which may be alike or different from each other; Y_1, Y_2 and Y_3, which may be alike or different from each other each represent an alkyl group containing 1 to 4 carbon atoms, an alkoxy group containing 1 to 4 carbon atoms, a halogen, cyano-, nitro-, or hydroxy radical or an amino group

wherein R_1 and R_2, which may be alike or different from each other each represent an alkyl group containing 1 to 4 carbon atoms; M represents a cation which is able to form water-soluble compounds of formula (I) selected from the group consisting of a proton, a cation derived from an alkali metal or an alkaline earth metal, ammonium, a group $N(R_3R_4R_5R_6)+$, wherein R_3, R_4, R_5 and R_6 each represent hydrogen or an alkyl group containing 1 to 4 carbon atoms and may be alike or different from each other, and a cation of any other metal, which is able to form water-soluble salts with benzosulfonic acids; m_1, m_2 and m_3 each represent a whole number from 0 to 5 which may be the same or different from each other and n_1, n_2 and n_3 each represent a whole number from 0 to 3, which

may be the same or different from each other, whereby at least one of these numbers n_1, n_2 and n_3 equals at least one and further comprising a compound selected from the group consisting of a transition metal or a transition metal-containing compound.

4,260,751

PYRAZOLO[1,2-a][1,2,4]BENZOTRIAZINES

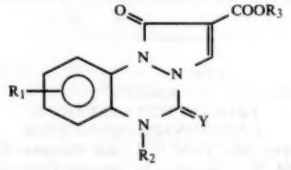
Uwe D. Treuner, Regensburg, Fed. Rep. of Germany, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 28, 1980, Ser. No. 144,482

Int. Cl.³ C07D *487/04*

U.S. Cl. 544—183 **10 Claims**

1. A compound of the formula



wherein

R_1 is hydrogen, lower alkyl, nitro, amino, lower alkylamino, di(lower alkyl) amino, SR_4, OR_4 or halogen;

R_2 is hydrogen, lower alkyl or aralkyl;

R_3 is hydrogen, lower alkyl or a salt forming ion; R_4 is hydrogen or lower alkyl; and Y is oxygen or sulfur.

4,260,752

CHLORINATION PROCESS

John F. Drew, Liverpool; John A. Pepper; Victor C. Shuttlewood, both of Chester, and Keith D. West, Knutsford, all of England, assignors to Chlor-Chem Limited, Cambridge, England

Filed Sep. 7, 1978, Ser. No. 940,505

Claims priority, application United Kingdom, Sep. 8, 1977, 37466/77

Int. Cl.³ C07D *251/28*

U.S. Cl. 544—190 **6 Claims**

1. A continuous process for the production of at least one member selected from the group consisting of dichlorocyanuric acid and trichlorocyanuric acid, which comprises reacting chlorine with at least one member selected from the group consisting of disodium cyanurate and trisodium cyanurate in an aqueous medium, characterised in that the reaction mixture is subjected to agitation by means of a stirrer, the spped of which is varied during the process, and all reaction parameters are maintained substantially constant except that the flow rate of the cyanurate feed solution to the reaction is varied, and the speed of the stirrer is increased as the flow rate increases and is decreased as the flow rate decreases, so as to give a product having a mean crystal size greater than 60×10 microns.

4,260,753

2-METHYLTHIO-4-CYCLOPROPYLAMINO-6-(α,β-DIMETHYL-PROPYLAMINO)-S-TRIAZINE

Dagmar Berrer, Riehen, Switzerland; Joachim Lorenz, Bensheim, and Reinhardt Grade, Zwingenberg-Rodau, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 7,138, Jan. 29, 1979. This application Feb. 11, 1980, Ser. No. 120,026

Claims priority, application Switzerland, Feb. 3, 1978, 1212/78

Int. Cl.³ C07D *251/52*

U.S. Cl. 544—208 **1 Claim**

1. 2-Methylthio-4-cyclopropylamino-6-(α,β-dimethylpropylamino)-s-triazine (I).

4,260,754

HEXAHYDROTRIAZINE CARBOXYLATES AND THE USE THEREOF AS CATALYSTS IN THE PRODUCTION OF POLYISOCYANURATE PLASTICS

Peter Haas, Haan; Johannes Blahak, Cologne, and Rolf Wiedermann, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

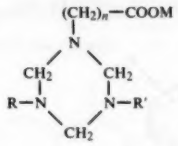
Filed Jun. 25, 1979, Ser. No. 51,789

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1978, 2829670

Int. Cl.³ C07D *251/04*

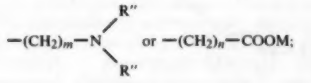
U.S. Cl. 544—215 **2 Claims**

1. A hexahydrotriazine carboxylate of the formula:



wherein

R and R′ which may be the same or different, each represents



R″ represents C_1–C_3 alkyl;

m represents an integer of from 2 to 6;

n represents an integer of from 1 to 10; and

M represents an alkali metal or NR'''_4

wherein R'''_4 represents H or C_1–C_4 alkyl.

4,260,755

NOVEL 6-PHENYL AND SUBSTITUTED 6-PHENYL-1,2,4-TRIAZOLO[4,3-B]PYRIDAZINES

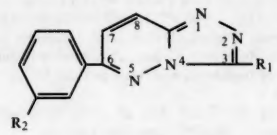
Daniel B. Moran, Suffern, and Jay D. Albright, Nanuet, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 31, 1979, Ser. No. 89,440

Int. Cl.³ C07D *237/00*; A61K *31/50*

U.S. Cl. 544—236 **6 Claims**

1. A compound selected from the group consisting of those of the formula:



wherein R_1 is selected from the group comprising CHO, CH_2Cl, $CHCl_2$, CCl_3, CH_2OH, CH_2O-lower alkyl (C_1–C_3), CH_2F, CHF_2, CF_3, CN and CO_2-lower alkyl (C_1–C_3); R_2 is selected from the group consisting of hydrogen, fluoro, chloro and trifluoromethyl.

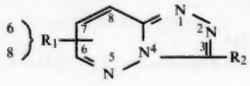
4,260,756

6- AND 8-HETEROARYL-1,2,4-TRIAZOLO[4,3-B]PYRIDAZINES

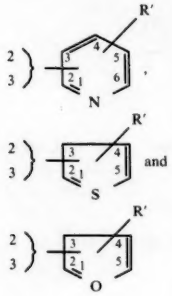
Daniel B. Moran, Suffern; John P. Dusza, and Jay D. Albright, both of Nanuet, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 15, 1979, Ser. No. 94,628
Int. Cl.[3] C07D *237/00;* A61K *31/495*
U.S. Cl. 544—236 **14 Claims**

1. A compound selected from the group consisting of those of the formula:



wherein R_1 is selected from the group consisting of:



where R′ is hydrogen or lower alkyl (C_1–C_3); and R_2 is hydrogen or lower alkyl (C_1–C_3).

4,260,757

POLY[d/i-1,2-(DIAZINYLIDENE)-ETHENE-1,2-DIOLS]

Richard H. Wiley, 8 Roosevelt Cir., Palo Alto, Calif. 94306

Filed Jul. 18, 1979, Ser. No. 58,389
Int. Cl.[3] C07D *403/14, 403/06*
U.S. Cl. 544—238 **1 Claim**

1. Poly[di-1,2-(diazinylidene)-ethene-1,2-diols] having the structures:

$$X—C_4H_2N_2—C(OH)\overset{=}{\underset{=}{\}}}C(OH)—C_4H_2N_2—C(OH)\overset{=}{\underset{=}{\}}}_nC(OH)—C_4H_2N_2—Y$$

in which the $C_4H_2N_2$ group is a diazinylidene diradical having each C(OH) group adjacent (ortho) to one but not two ring nitrogen atoms and not adjacent (ortho) to each other; the X and Y terminal groups are H, COOH, and COOK; and n has a value of one to seven.

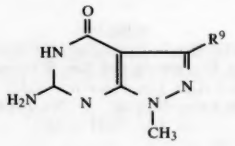
4,260,758

PYRAZOLO (3,4-d) PYRIMIDINES AND METHODS OF MAKING

Robert W. Morrison, Jr.; William R. Mallory, and Virgil L. Styles, all of Raleigh, N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 926,072, Jul. 19, 1978, abandoned. This application Sep. 17, 1979, Ser. No. 76,405
Int. Cl.[3] C07D *487/04;* A61K *31/505*
U.S. Cl. 544—262 **6 Claims**

1. A compound of the formula (XIX) or a tautomer or salt thereof



where R^9 is selected from lower alkyl, phenyl, phenyl substituted by one or more hydroxy or lower alkoxy, or pyridyl.

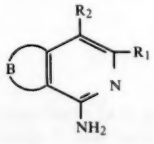
4,260,759

PROCESS FOR PREPARING 1-AMINONAPHTHYRIDINES

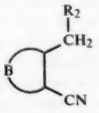
Joseph Mayer, New York, N.Y., and Margaret H. Sherlock, Bloomfield, N.J., assignors to Schering-Corporation, Kenilworth, N.J.

Division of Ser. No. 762,605, Jan. 26, 1977, Pat. No. 4,115,395, which is a division of Ser. No. 379,525, Jul. 16, 1973, Pat. No. 3,928,367, which is a continuation-in-part of Ser. No. 119,377, Feb. 26, 1971, abandoned, which is a continuation-in-part of Ser. No. 816,075, Apr. 14, 1969, abandoned. This application Aug. 14, 1978, Ser. No. 933,341
Int. Cl.[3] C07D *239/20*
U.S. Cl. 544—333 **7 Claims**

1. A process for preparing compounds of the formula:



wherein R_1 is selected from the group consisting of lower alkyl, phenyl, benzyl, phenethyl, thienyl, furyl, pyrazinyl, pyrimidinyl, and pyridyl, R_2 is selected from the group consisting of hydrogen, lower alkyl, phenyl, benzyl, phenethyl, and pyridyl, and B, together with the carbon atoms to which it is attached, is a pyride moiety which comprises condensing an O-alkyl aryl nitrile of the formula:



with an organic nitrile of the formula R_1CN, said condensation taking place by contacting said reactants together under strongly basic conditions, said contact taking place in an aprotic solvent at temperatures within the range of about −60° to 80° C.

4,260,760

DIARYL-ALIPHATIC-AMINO-ALIPHATIC-PIPERAZINES

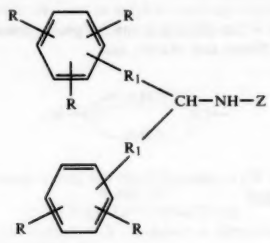
Richard A. Dybas, Center Square, Pa.; Nathaniel Grier, Englewood, and Bruce E. Witzel, Westfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 747,155, Dec. 3, 1976, which is a continuation-in-part of Ser. No. 609,773, Sep. 2, 1975, Pat. No. 4,061,775. This application Mar. 12, 1979, Ser. No. 11,294

Int. Cl.[3] **C07D** *241/04, 295/00*

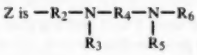
U.S. Cl. 544—396 **1 Claim**

1. A compound of the formula:



where each R is hydrogen or loweralkyl;

each R_1 is alike or different and is C_1 to C_4 alkylene;



and where

R_2 is 2-hydroxy-1,3-trimethylene, or R_1 as previously defined;

where R_3 and R_6 taken together are ethylene, R_4 is also ethylene, and R_5 is aminoethyl, aminopropyl, or 3-amino-2-hydroxypropyl and acid addition salts thereof.

4,260,761

INTERMEDIATES FOR THE PREPARATION OF OCTAHYDRO-1H-BENZO[4,5]FURO[3,2-e]-ISOQUINOLINE ANALGESIC AND NARCOTIC ANTAGONISTIC COMPOUNDS

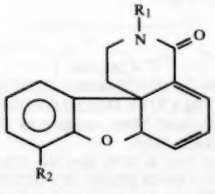
Engelbert Ciganek, Kennett Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 54,447, Jul. 9, 1979, which is a continuation-in-part of Ser. No. 948,038, Oct. 2, 1978, abandoned. This application May 19, 1980, Ser. No. 151,241

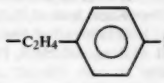
Int. Cl.[3] **C07D** *217/04;* **A61K** *31/47*

U.S. Cl. 546—66 **5 Claims**

1. A compound of the formula



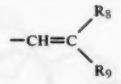
R_1 is selected from the group consisting of —H, C_{1-10} alkyl, $—CH_2—R_6$,



and $(CH_2)_nCN$ in which n=1–3;

R_2 is selected from the group consisting of H, —OH, C_{1-2} alkoxy and C_{2-12} acyloxy of an alkanoic acid;

R_6 is selected from the group consisting of



—C≡CH, C_{3-6} cycloalkyl, 2-thienyl, 2-furyl and 2-tetrahydrofuryl, the 2-furyl and 2-tetrahydrofuryl optionally substituted with a methyl group;

R_7 is selected from the group consisting of C_{1-3} alkyl, —OCH_3, —Cl, —Br and —F.

4,260,762

OCTAHYDRO-1H-PYRROLO[2,3-G]ISOQUINOLINES

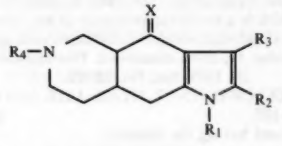
Leo Berger, Montclair, and Gary L. Olson, Westfield, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 950,947, Oct. 13, 1978, abandoned. This application Sep. 10, 1979, Ser. No. 73,813

Int. Cl.[3] **C07D** *471/04*

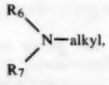
U.S. Cl. 546—84 **33 Claims**

1. A compound of the formula



A

wherein R_1 is hydrogen, alkyl, alkanoyl, aroyl or aralkyl; R_2 and R_3, independently, are hydrogen, alkyl, cycloalkyl, alkenyl, acyl, aryl or aralkyl; and R_4 is hydrogen, alkyl, hydroxyalkyl, phenyl-hydroxyalkyl, halophenyl-hydroxyalkyl, alkylphenyl-hydroxyalkyl, alkoxyphenyl-hydroxyalkyl, alkoxyalkyl, aryloxy-hydroxyalkyl, alkoxy-hydroxyalkyl, acyloxyalkyl, arylcarbonylalkyl, alkoxy-carbonylalkyl, aralkyl, alkenyl, alkylcycloalkyl, alkynyl, thienyl-alkyl, furyl-alkyl, arylcarboxamidoalkyl, acylalkyl, cyclic-alkyloxoalkyl, cyclic-alkylhydroxyalkyl, alkenyloxyalkyl, aralkenyl, aryloxyalkyl, N-alkyl-pyrrolidinylalkyl, trifluoroalkyl of 2 to 6 carbon atoms, aryl-N-imidazolonylalkyl, or



wherein R_6 and R_7, independently, are hydrogen or alkyl, or taken together with the nitrogen form a morpholine, N-methyl-piperazino, piperazino or pyrrolidino ring, and X is O or S,

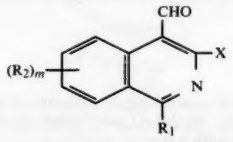
an optical isomer, a geometric isomer, or a pharmaceutically acceptable acid addition salt thereof.

4,260,763
ISOQUINOLINE ALDEHYDES

Wilhelm Bartmann; Elmar Konz, both of Bad Soden am Taunus, and Hansjörg Kruse, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 14, 1979, Ser. No. 20,410
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1978, 2811361
Int. Cl.³ A61K *31/47*; C07D *217/16*
U.S. Cl. 546—144 **8 Claims**

1. Isoquinoline 4-aldehyde of the formula



in which X denotes bromine or chlorine,

R_1 is phenyl or phenyl mono- or disubstituted by halogen, hydroxy, nitro alkyl or alkoxy each having from 1 to 6 carbon atoms, benzoyloxy, trifluoromethyl, amino or amino substituted by one or two alkyl groups having from 1 to 4 carbon atoms or is pyridyl or thienyl;

R_2 is hydrogen, halogen, hydroxy, alkyl or alkoxy having from 1 to 6 carbon atoms, nitro, amino, benzyloxy, methylene dioxy or ethylene dioxy and m is 1 or 2;

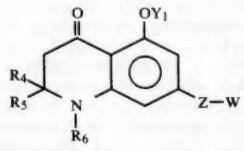
or the physiologically tolerated salts thereof.

4,260,764
9-HYDROXYOCTAHYDROBENZO [c] QUINOLINES AND INTERMEDIATES THEREFOR

Michael R. Johnson, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 777,928, Mar. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 753,619, Dec. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 687,332, May 17, 1976, abandoned. This application May 29, 1979, Ser. No. 42,773
Int. Cl.³ C07D *215/02, 221/06*; A61K *31/47*
U.S. Cl. 546—153 **15 Claims**

1. A compound having the formula:



wherein

Y_1 is selected from the group consisting of hydrogen, benzyl, methyl and ethyl;

R^4 is selected from the group consisting of hydrogen, alkyl having from 1 to 6 carbon atoms and $-(CH_2)_z-C_6H_5$ wherein z is an integer from 1 to 4;

R_5 is selected from the group consisting of hydrogen, methyl and ethyl;

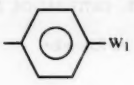
R_6 is selected from the group consisting of hydrogen, $-(CH_2)_y-$ carbalkoxy having from one to four carbon atoms in the alkoxy group and wherein y is 0 or an integer from 1 to 4, carbobenzyloxy, formyl, alkanoyl having from two to five carbon atoms, alkyl having from one to six carbon atoms and $-(CH_2)_x-C_6H_5$ wherein x is an integer from 1 to 4; and $-CO(CH_2)_{x-1}-C_6H_5$;

Z is selected from the group consisting of

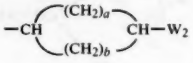
(a) alkylene having from one to nine carbon atoms;

(b) $-(alk_1)_m-X-(alk_2)_n-$ wherein each of (alk_1) and (alk_2) is alkylene having from one to nine carbon atoms, with the proviso that the summation of carbon atoms in (alk_1) plus (alk_2) is not greater than nine; each of m and n is 0 or 1; X is selected from the group consisting of O, S, SO and SO_2; and

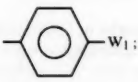
W is selected from the group consisting of pyridyl, piperidyl,



wherein W_1 is selected from the group consisting of hydrogen, fluoro and chloro; and



wherein W_2 is selected from the group consisting of hydrogen and



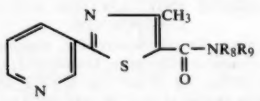
a is an integer from 1 to 5 and b is 0 or an integer from 1 to 5; with the proviso that the sum of a and b is not greater than 5.

4,260,765
2-(3-PYRIDYL)-5-THIAZOLECARBOXAMIDES

William A. Harrison, Guelph, Canada; Winchester L. Hubbard, Woodbridge, and Robert E. Grahame, Jr., Cheshire, both of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Continuation of Ser. No. 861,768, Dec. 19, 1977, abandoned, which is a continuation-in-part of Ser. No. 140,571, May 5, 1971, abandoned. This application Jun. 5, 1979, Ser. No. 45,809
Int. Cl.³ C07D *417/04*
U.S. Cl. 546—280 **10 Claims**

1. A compound having the general formula



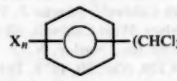
wherein R_8 and R_9 are independently selected from the group consisting of (1) hydrogen; (2) alkyl, alkenyl, hydroxyalkyl, alkoxyalkyl, aminoalkyl, alkylaminoalkyl containing up to 8 carbon atoms; (3) C_5 to C_8 cycloalkyl; and (4) C_6–C_{10} aryl, haloaryl, aralkyl, alkaryl.

4,260,766
PREPARATION OF (DICHLOROMETHYL) PYRIDINES BY REDUCTIVE DECHLORINATION

Leo R. Morris, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 4, 1979, Ser. No. 100,084
Int. Cl.³ C07D *213/26, 213/55, 213/57*
U.S. Cl. 546—303 **6 Claims**

1. A method for preparing (dichloromethyl) substituted pyridines corresponding to the formula



wherein X represents chloro, bromo, fluoro, aryloxy, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkenyloxy of 2 to 4 carbon atoms, cyano or carboxy; n represents an integer of from 0 to 4 and p is 1 or 2 which comprises reacting the corresponding (trichloromethyl)pyridine compound, under reductive dechlorination conditions, with metallic iron, ferrous chloride or ferrous sulphate and an organic or inorganic acid at temperatures between ~80° and ~120° C.

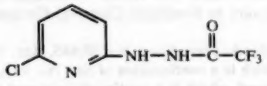
4,260,767

2-PYRIDYLHYDRAZIDES

John P. Dusza, Nanuet, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 26, 1979, Ser. No. 106,789
Int. Cl.³ C07D *213/77*
U.S. Cl. 546—306 **7 Claims**

1. The compound according to the formula:



trifluoroacetic acid 2-(6-chloro-2-pyridinyl)hydrazide.

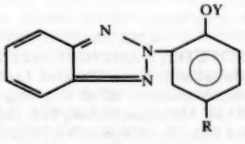
4,260,768

COPOLYMERIZABLE, ULTRAVIOLET LIGHT ABSORBER 2-(2H-BENZOTRIAZOL-2-YL)-4-ALKYLPHENOL ACRYLIC ACID ESTERS

Donald H. Lorenz, Basking Ridge, N.J., and Bruce A. Gruber, Worthington, Ohio, assignors to GAF Corporation, New York, N.Y.

Filed Jan. 17, 1980, Ser. No. 112,881
Int. Cl.³ C07D *249/20*
U.S. Cl. 548—261 **7 Claims**

1. Ultraviolet light absorber compounds having the formula



where R is hydrogen or alkyl C_1–C_6; and

Y is a radical 3–12 carbon atoms and selected from the group consisting of acrylyl, methacrylyl, acryloxyalkyl and alkylacryloxyhydroxyalkyl.

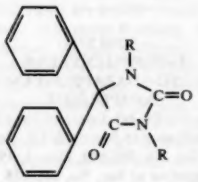
4,260,769

5,5-DIPHENYLHYDANTOINS

Valentino J. Stella, Lawrence, and Kenneth B. Sloan, Eudora, both of Kans., assignors to INTERx Research Corporation, Lawrence, Kans.

Division of Ser. No. 790,087, Apr. 22, 1977, Pat. No. 4,163,058. This application Apr. 25, 1979, Ser. No. 33,234
Int. Cl.³ C07F *9/06*
U.S. Cl. 548—112 **3 Claims**

1. A 5,5-diphenylhydantoin compound having the structural formula:



wherein each R is independently selected from the group consisting of hydrogen and —CH(R_1)—O—P(O)(OH)$_2$, wherein R_1 is selected from the group consisting of hydrogen and C_1–C_7 straight or branched chain alkyl; with the proviso that the R's cannot simultaneously be hydrogen; or the pharmaceutically acceptable acid addition or basic salts, C_1–C_4 alkylhalide quaternary salts or N-oxide thereof.

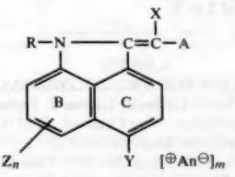
4,260,770

NAPHTHOLACTAM DYES

Hansrudolf Schwander, Riehen, and Christian Zickendraht, Binningen, both of Switzerland, assignors to Ciba-Geigy Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 2, 1977, Ser. No. 793,094
Claims priority, application Switzerland, Jun. 1, 1976, 6864/76
Int. Cl.³ C07D *263/56, 277/64, 235/14*
U.S. Cl. 548—159 **6 Claims**

1. Dyes of the formula



(I)

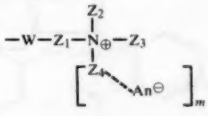
wherein

R represents C_1–C_4 alkyl, or hydrogen,

X represents CN,

An represents an anion,

Y represents group of the formula



wherein

W represents a group of the formula —CONH—, —COO— or —COS—,

Z_1 represents alkylene having 1 to 8 C atoms, or C_2–C_6-alkylene-(O-C_2–C_6-alkylene)$_{1-3}$,

Z_2 represents hydrogen, C_1–C_6 alkyl, or C_3–C_5-alkenyl,

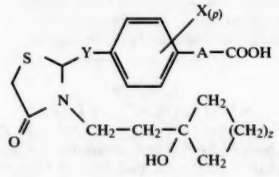
Z_3 represents hydrogen, C_1–C_6 alkyl, or C_3–C_5-alkenyl,
Z_4 represents hydrogen, C_1–C_6 alkyl, C_3–C_5-alkenyl, cyclohexyl or benzyl,
An represents an anion,
m represents 0 or 1,
Z represents alkyl or alkoxy of 1 to 4 carbon atoms, halogen, alkylmercapto or alkylsulfonyl with 1 to 4 carbon atoms
n represents 0, 1 or 2,
m represents 0 or 1, and
A represents benzthiazole, benzoxazole, benzimidazole optionally substituted by one or two C_1–C_4-alkyl groups or chlorine or bromine atoms or —CN.

4,260,771
INTERPHENYLENE 9-THIA-11-OXO-12-AZAPROSTANOIC ACID COMPOUNDS

Edward J. Cragoe, Jr.; Ta-Jyh Lee, and John B. Bicking, all of Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 965,641, Dec. 1, 1978, abandoned, which is a continuation of Ser. No. 846,065, Oct. 27, 1977, abandoned. This application Dec. 20, 1979, Ser. No. 105,487
Int. Cl.³ C07D *277/04*
U.S. Cl. 548—187 **7 Claims**

1. The compound having the formula:



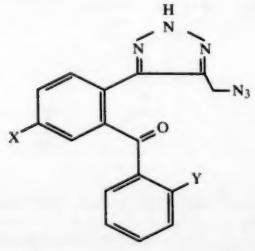
wherein
A is vinylene or $(CH_2)_m$ where m is 0 or 2;
Y is $CH_2CH{=}CH_2$ when m is 0, or Y is CH_2 when A is vinylene or ethylene;
X is hydrogen, halogen, or lower alkyl;
p is 1 or 2; and
z is an integer of 2 to 6.

4,260,772
INTERMEDIATES FOR TRIAZOLOBENZAZEPINES

Rodney I. Fryer, North Caldwell; Eugene J. Trybulski, Parsippany, and Armin Walser, West Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 99,109, Nov. 30, 1979. This application Jul. 30, 1980, Ser. No. 173,580
Int. Cl.³ C07D *249/06*
U.S. Cl. 548—255 **1 Claim**

1. A compound of the formula



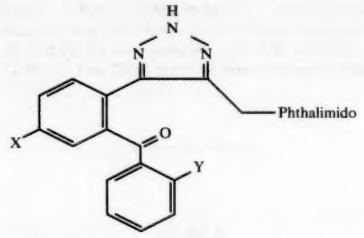
wherein X and Y are hydrogen or halogen.

4,260,773
INTERMEDIATES FOR TRIAZOLOBENZAZEPINES

Rodney I. Fryer, North Caldwell; Eugene J. Trybulski, Parsippany, and Armin Walser, West Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 99,109, Nov. 30, 1979. This application Jul. 30, 1980, Ser. No. 173,581
Int. Cl.³ C07D *249/06*
U.S. Cl. 548—255 **1 Claim**

1. A compound of the formula



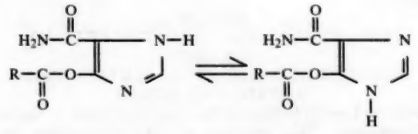
wherein X and Y are hydrogen or halogen.

4,260,774
5-CARBAMOYL IMIDAZOLES

Toshio Atsumi, Ashiya; Yoshiaki Takebayashi, Toyonaka; Yuzo Tarumi, Nishinomiya, and Hisao Yamamoto, Kobe, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

Continuation-in-part of Ser. No. 30,645, Apr. 16, 1979, abandoned, which is a continuation of Ser. No. 923,404, Jul. 10, 1978, abandoned, which is a continuation-in-part of Ser. No. 811,597, Jun. 30, 1977, abandoned. This application Jun. 25, 1979, Ser. No. 51,741
Claims priority, application Japan, Jul. 2, 1976, 51-79098; Oct. 26, 1976, 51-12965
Int. Cl.³ C07D *233/90*
U.S. Cl. 548—336 **15 Claims**

1. A compound of the formula



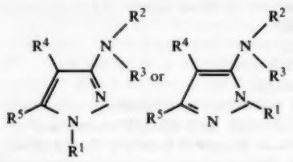
wherein R is an adamantyl group, or a phenyl group unsubstituted or substituted with a lower alkyl group, a lower alkoxy group, a lower alkylthio group, a halogen atom, a nitro group, a cyano group, a methylenedioxy group or an acetamido group.

4,260,775
SUBSTITUTED 3-AMINOPYRAZOLES

Peter Plath, Ludwigshafen; Bruno Wuerzer, Limburgerhof, and Wolfgang Rohr, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 16, 1978, Ser. No. 951,566
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1977, 2747531
Int. Cl.³ C07D *231/38*
U.S. Cl. 548—362 **3 Claims**

1. A pyrazole of the formula



where

R^1 is lower alkanoyl which may be optionally substituted by halogen or methoxy or is lower alkoxycarbonyl or phenoxycarbonyl,

R^2 is hydrogen or lower alkyl,

R^3 is phenyl which may be optionally mono- or disubstituted by lower alkyl, lower alkoxy, lower alkylthio, lower haloalkyl, lower haloalkoxy, halogen, lower carbalkoxy or hydroxy,

R^4 is methoxycarbonyl, and

R^5 is hydrogen or methyl, and the agriculturally acceptable acid addition salts thereof.

4,260,776

HETEROCYCLIC DYESTUFFS

Horst Harnisch, Much, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 23, 1979, Ser. No. 5,925

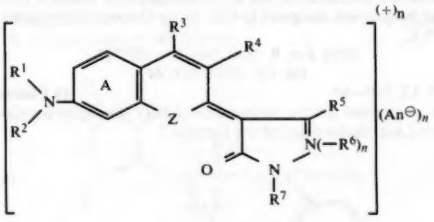
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1978, 2803104; Oct. 13, 1978, 2844606

Int. Cl.[3] **C07D** *405/04, 405/14, 491/052, 491/147*

U.S. Cl. 548—364 **3 Claims**

1. A dyestuff of the formula

(II)



wherein

R^1 represents hydrogen, alkyl, alkenyl, cycloalkyl, aralkyl, aryl or a 2-membered or 3-membered alkylene radical linked to the adjacent ortho-position of the ring A,

R^2 represents hydrogen, alkyl, alkenyl, aralkyl or a 2-membered or 3-membered alkylene radical linked to the adjacent ortho-position of the ring A,

R^3 represents hydrogen, alkyl, aralkyl, aryl, alkoxy, halogen, cyano, carboxyl, alkoxycarbonyl, alkylsulphonyl or arylsulphonyl,

R^4 represents hydrogen, alkyl, aryl, halogen, hydroxyl, alkoxy, nitro, cyano, carboxyl, alkoxycarbonyl, formyl, carbamoyl, ureido, amidino, amidinium, alkylsulphonyl, arylsulphonyl, sulpho, pyrazol-1-yl, 4-chloropyrazol-1-yl, tetrazol-1-yl, or 1,2,3-triazol-1-yl, 1,2,3-triazol-2-yl, 1,2,4-triazol-1-yl or benzo-s-triazol-2-yl, the nitrogen atoms of any of the triazoles optionally being quaternished by C_1–C_4-alkyl or benzyl,

Z represents oxygen or sulphur,

R^5 represents hydrogen, alkyl, aralkyl, aryl, chlorine, bromine, carboxyl, alkoxycarbonyl, carbamoyl, cyano, hydroxyl, alkoxy, acyloxy or a radical of the formula $—N(R^8R^9)$,

R^6 represents alkyl, alkenyl or aralkyl,

n represents 0 or 1,

R^7 represents alkyl, aralkyl or aryl,

R^8 represents hydrogen, alkyl, aralkyl, cycloalkyl, aryl, pyridyl, thienyl or sulpholan-3-yl,

R^9 represents an acyl radical, and

An^- represents an anion,

and wherein the cyclic and acyclic radicals can carry substituents selected from the group consisting of C_1–C_4-alkyl, OH, C_1–C_4 alkoxy, halogen, sulpho, CN and NO_2.

4,260,777

DIAGNOSTIC AGENT FOR THE DETECTION OF PROTEIN IN BODY FLUIDS

Walter Rittersdorf, Mannheim-Waldhof; Werner Güthlein, Mannheim-Neckarau; Wolfgang Werner, Mannheim-Vogelstang; Hanz-Georg Rey, and Peter Rieckmann, both of Mannheim-Waldhof, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Fed. Rep. of Germany

Division of Ser. No. 661,687, Feb. 26, 1976, Pat. No. 4,013,416.

This application Nov. 10, 1976, Ser. No. 740,462

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1975, 2510633

Int. Cl.[3] **C07D** *327/04*

U.S. Cl. 549—33 **1 Claim**

1. 3',3'',5',5''-Tetrachlorophenol-3,4,5,6-tetrabromosulfophthalein.

4,260,778

PROCESS FOR THE PREPARATION OF THIOINDIGO COMPOUNDS

Detlef-Ingo Schütze, Bergisch-Gladbach, and Klaus Wunderlich, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 21, 1979, Ser. No. 40,520

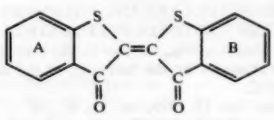
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1978, 2825313

Int. Cl.[3] **C09B** *7/10*

U.S. Cl. 549—52 **7 Claims**

1. A process for the preparation of thioindigo compounds of the formula

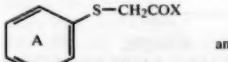
(I)



in which

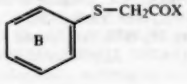
A and B designate and identical or different unsubstituted benzene rings or benzene rings which each carry 1,2,3 or 4 substituents from the series comprising halogen, nitro, trifluoromethyl, alkyl, alkoxy, aryloxy, acylamino, alkylmercapto and —COR, R representing alkyl, aryl, alkoxy or amino which can be substituted or benzene rings onto which further carbocyclic and heterocyclic rings are fused which rings can carry one or two of said substituents, which comprises contacting a compound of one of the following formulae

(IIa)



and/or

(IIb)



in which

A and B have the meaning indicated above and
X designates halogen
in a liquid mixture consisting essentially of a melt consisting essentially of said compound (IIa) and/or (IIIa), aluminum halide, an alkali metal halide and SO_2 and oxidizing the resulting intermediate product and thereafter working up the mixture to give a compound of the formula (I).

4,260,779

OXOTHIA COMPOUNDS

Raymond Bernasconi, Oberwil; Pier G. Ferrini, Binningen; Richard Göschke, Bottmingen, and Jacques Gosteli, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

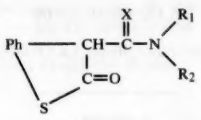
Continuation of Ser. No. 780,951, Mar. 24, 1977, abandoned. This application Nov. 9, 1979, Ser. No. 92,821

Claims priority, application Switzerland, Apr. 9, 1976, 4538/76

Int. Cl.[3] **C07D** *333/64*

U.S. Cl. 549—52 **9 Claims**

1. An oxothia compound of the formula



(I)

in which Ph represents 1,2-phenylene or 1,2-phenylene which is substituted by lower alkyl, lower alkoxy, halogen, trifluoromethyl and/or nitro, X represents oxygen or sulphur, R_1 represents lower alkyl, lower alkenyl, cycloalkyl, cycloalkenyl cycloalkyl-lower alkyl, phenyl-lower alkyl or phenyl-lower alkyl which is substituted in the phenyl part by lower alkyl, lower alkoxy, halogen, trifluoromethyl and/or nitro, phenyl or phenyl which is substituted by lower alkyl, lower alkoxy, halogen, trifluoromethyl and/or nitro, and R_2 represents hydrogen or lower alkyl, or a pharmaceutically acceptable salt thereof.

4,260,780

PHENYLMETHYLPOLYSILANE POLYMERS AND PROCESS FOR THEIR PREPARATION

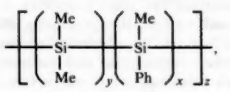
Robert C. West, Madison, Wis., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 27, 1979, Ser. No. 97,778

Int. Cl.[3] **C07F** *7/08*

U.S. Cl. 556—430 **10 Claims**

1. A phenylmethylpolysilane polymer having the following structural formula:



wherein Me is methyl, Ph is phenyl, the ratio of x to y varies from about 1:3 to 1:20, and z is an integer ranging from about 1 to 100.

4,260,781

PROCESS FOR THE MANUFACTURE OF CARBAMATES

Robert J. Harvey, Teaneck, N.J., assignor to Halcon Research and Development Corp., New York, N.Y.

Filed May 25, 1979, Ser. No. 42,675

Int. Cl.[3] **C07C** *125/063, 125/07*

U.S. Cl. 560—24 **14 Claims**

1. A process for producing carbamates which comprises contacting a reactant consisting essentially of an organic primary or secondary amine selected from the group consisting of aliphatic amines, alicyclic amines and aromatic amines having the formula
(i) RNH_2,
(ii) RNH(R'), or
(iii) $R(NH_2)_m$
wherein R and R' are independently selected from a group consisting of alkyl, aryl, alkaryl, arakyl, and cycloalkyl and wherein m is an integer of from 2 to 5, and substituted derivatives of the foregoing groups wherein the substituent is inert and is a member selected from the group consisting of alkyl, aryl, alkaryl, aralkyl, cycloalkyl, halogen, cyano, tertiary amino, carboxyl, ether and thioether, and amino-substituted derivatives of the foregoing hydrocarbon substituents to the R and R' groups, in a reaction zone at a temperature of from about 60° to 250° C. under substantially anhydrous conditions and in the substantial absence of reactive oxygen with (1) carbon monoxide, (2) an organic compound which contains at least one hydroxyl group per molecule and which is selected from the group consisting of compounds of the formula $Z(OH)_n$ wherein n is an integer of at least one and Z is an optionally substituted aliphatic, cycloaliphatic or araliphatic group, and (3) a metal reactant consisting essentially of a noncarbonyl compound or complex of a metal of Group VIII of the Periodic Table to form the carbamate corresponding to said amine and said hydroxyl-containing organic compound, said metal being in at least a +2 valence state in said metal reactant, said metal reactant being employed in a molar ratio of the moles of metal in the metal reactant to the moles of amine reactant charged of from about 0.05:1 to 5:1.

4,260,782

PROCESS FOR THE PREPARATION OF N-(1'-ALKOXYCARBONYLETHYL)-2,6-DIALKYLANILINES

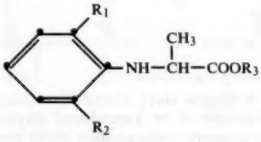
Alfred Grieder, Böckten, and Klaus-Jürgen Coers, Reinach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 9, 1980, Ser. No. 157,761

Int. Cl.[3] **C07C** *101/44*

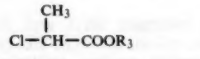
U.S. Cl. 560—43 **16 Claims**

1. A process for the preparation of N-(1'-alkoxycarbonylethyl)-2,6-dialkylanilines of the formula I



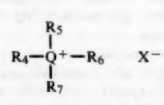
(I)

in which R_1 and R_2 are each methyl or ethyl and R_3 is an alkyl group having 1–4 carbon atoms, which comprises reacting a 2-chloropropionic acid ester of the formula II



(II)

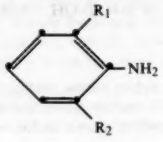
in which R_3 is as defined above, in the presence of water and of a quaternary compound of the formula III



(III)

in which Q is nitrogen or phosphorus, the radicals R_4, R_5, R_6 and R_7 are each an alkyl radical having 1 to 16 carbon atoms,

or phenyl, and one of the radicals R_4, R_5, R_6 and R_7 can also be benzyl, and, if Q is nitrogen, Q together with three of the radicals R_4, R_5, R_6 and R_7 can also be a pyridine radical, whilst the fourth radical is alkyl having 1–16 carbon atoms, phenyl or benzyl, and $X^{\ominus}$ is a halide anion or a bisulfate anion, with an alkali metal iodide to give a mixture of the 2-chloropropionic acid ester of the formula II and the corresponding 2-iodopropionic acid ester, subsequently reacting this mixture, after separating off the aqueous phase, at 100°–130° C., in the presence of an alkali metal carbonate or alkali metal bicarbonate as an acid acceptor, with excess 2,6-dialkylaniline of the formula IV


(IV)

in which R_1 and R_2 are as defined, extracting the reaction mixture with water and separating, by distillation, the mixture of 2,6-dialkylaniline of the formula IV and N-(1′-alkoxycarbonylethyl)-2,6-dialkylaniline of the formula I, which is obtained after separating off the aqueous extract.

4,260,783

19-HYDROXY-INTER-PHENYLENE-13,14-DIHYDRO-PG$_1$-COMPOUNDS

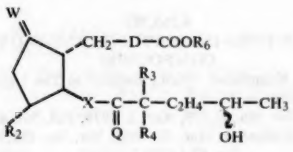
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,889, Apr. 2, 1979, Pat. No. 4,228,104. This application Oct. 26, 1979, Ser. No. 88,445

Int. Cl.^{3} C07C *177/00*

U.S. Cl. 560—53 **2 Claims**

1. A compound of the formula



wherein D is

(1) —(m—ph)—$(CH_2)_2$—, or

(2) —(m—ph)—O—CH_2—

wherein —(m—ph)— is inter-meta-phenylene, and

wherein Q is α-OH:β-R_5 or α-R_5:β-OH,

wherein R_5 is hydrogen or methyl,

wherein R_6 is

(a) hydrogen,

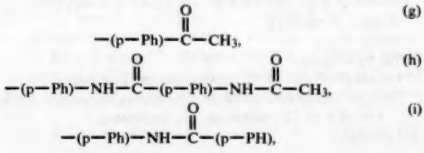
(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,

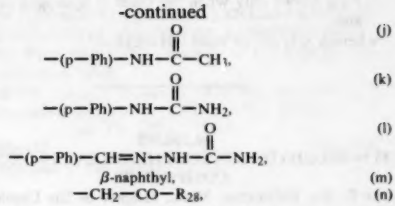
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive;


(g)

(h)

(i)

-continued


(j)

(k)

(l)

(m)

(n)

(m) β-naphthyl,

(n) —CH_2—CO—R_{28},

wherein (p-Ph) is para-phenyl or inter-para-penylene and R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl;

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein W is oxo, methylene, α-OH:β-H, or α-H:β-OH; and

wherein X is —CH_2CH_2—.

4,260,784

9-DEOXY-9-METHYLENE-11-DEOXY-INTER-PHENYLENE-19-OXO-PGF$_1$ COMPOUNDS

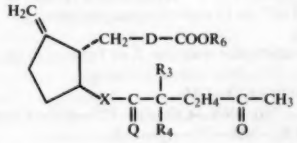
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979, Pat. No. 4,228,104. This application Mar. 20, 1980, Ser. No. 131,955

Int. Cl.^{3} C07C *177/00*

U.S. Cl. 560—53 **4 Claims**

1. A compound of the formula



wherein D is

(1) —(m—Ph)—$(CH_2)_2$—, or

(2) —(m—Ph)—O—CH_2—,

wherein —(m—Ph)— is inter-meta-phenylene;

wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;

wherein R_6 is

(a) hydrogen,

(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,

(g) —(p—Ph)—CO—CH_3,

(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,

(i) —(p—Ph)—NH—CO—(p—Ph),

(j) —(p—Ph)—NH—CO—CH_3,

(k) —(p—Ph)—NH—CO—NH_2,

(l) —(p—Ph)—CH=N—NH—CO—NH_2,

(m) β-naphthyl,

(n) —CH_2—CO—R_{28},

wherein (p—Ph) is para-phenyl or inter-para-phenylene,

wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

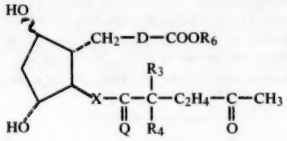
(o) a pharmacologically acceptable cation;

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and

R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is cis- or trans-CH=CH—.

4,260,785
13,14-DIDEHYDRO-INTER-PHENYLENE-19-OXO-PGF$_1$ COMPOUNDS
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 25,879, Apr. 2, 1979, Pat. No. 4,228,104. This application Mar. 20, 1980, Ser. No. 131,956
Int. Cl.^{3} C07C *177/00*
U.S. Cl. 560—53 **4 Claims**

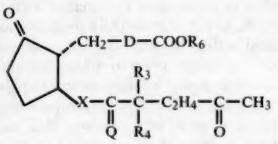
1. A compound of the formula



wherein D is
(1) —(m—pH)—$(CH_2)_2$—; or
(2) —(m—Ph)—O—CH_2—,
wherein —(m—Ph)— is inter-meta-phenylene;
wherein Q is αOH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbons atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p——Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p—Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is —C□C—.

4,260,786
13,14-DIDEHYDRO-INTER-PHENYLENE-11-DEOXY-19-OXO-PGE$_1$ COMPOUNDS
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 25,879, Apr. 2, 1979, Pat. No. 4,228,104. This application Mar. 20, 1980, Ser. No. 131,960
Int. Cl.^{3} C07C *177/00*
U.S. Cl. 560—53 **4 Claims**

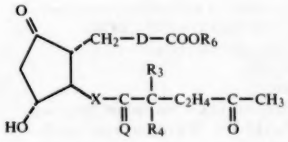
1. A compound of the formula



wherein D is
(1) —(m—Ph)—$(CH_2)_2$—; or
(2) —(m-Ph)—O—CH_2—,
wherein —(m-Ph)— is inter-meta-phenylene;
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p-Ph)—CO—CH_3,
(h) —(p-Ph)—NH—CO—(p-Ph)—NH—CO—CH_3,
(i) —(p-Ph)—NH—CO—(p-Ph),
(j) —(p-Ph)—NH—CO—CH_3,
(k) —(p-Ph)—NH—CO—NH_2,
(l) —(p-Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p-Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is —C≡C—.

4,260,787
13,14-DIDEHYDRO-INTER-PHENYLENE-19-OXO-PGE$_1$ COMPOUNDS
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 25,879, Apr. 2, 1979, Pat. No. 4,228,104. This application Mar. 20, 1980, Ser. No. 131,964
Int. Cl.^{3} C07C *177/00*
U.S. Cl. 560—53 **4 Claims**

1. A compound of the formula



wherein D is
(1) —(m—Ph)—$(CH_2)_2$—; or
(2) —(m—Ph)—O—CH_2—, wherein —(m—Ph)— is inter-meta-phenylene;
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive, (d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p—Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is —C≡C—.

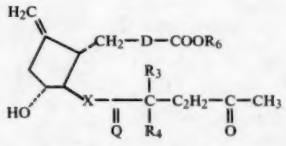
4,260,788

13,14-DIDEHYDRO-INTER-PHENYLENE-9-DEOXY-9-METHYLENE-19-OXO-PGF$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979, Pat. No. 4,228,104. This application Mar. 20, 1980, Ser. No. 131,966
Int. Cl.[3] **C07C** *177/00*
U.S. Cl. 560—53 **4 Claims**

1. A compound of the formula



wherein D is
(1) —(m—Ph)—$(CH_2)_2$—; or
(2) —(m—Ph)—O—CH_2-,
wherein —(m—Ph)— is inter-meta-phenylene;
wherein Q is α—OH:β—R_5 or α—R_5:β—OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—pH)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p—Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is —C≡C—.

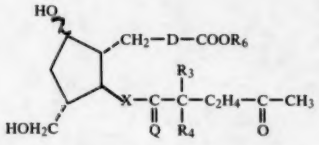
4,260,789

13,14-DIDEHYDRO-INTER-PHENYLENE-11-DEOXY-11-HYDROMETHYL-19-OXO-PGF$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979, Pat. No. 4,228,104. This application Mar. 20, 1980, Ser. No. 131,967
Int. Cl.[3] **C07C** *177/00*
U.S. Cl. 560—53 **4 Claims**

1. A compound of the formula



wherein D is
(1)—(m—Ph)—$(CH_2)_2$—; or
(2)—(m—Ph)—O—CH_2—,
wherein —(m—Ph)— is inter-meta-phenylene;
wherein Q is α—OH:β—R_5 or α—R_5:β—OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g)—(p—Ph)—CO—CH_3,
(h)—(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i)—(p—Ph)—NH—CO—(p—Ph),
(j)—(p—Ph)—NH—CO—CH_3,
(k)—(p—Ph)—NH—CO—NH_2,
(l)—(p—Ph)—CH=N—NH—CO—NH_2,
(m) β—naphthyl,
(n)—CH_2—CO—R_{28},
wherein (p-Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is —C≡C—.

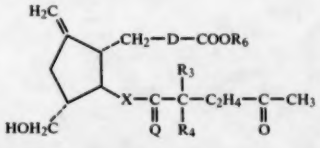
4,260,790

13,14-DIDEHYDRO-INTER-PHENYLENE-11-DEOXY-11-HYDROXYMETHYL-9-DEOXY-9-METHYLENE-19-OXO-PGF$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,981
Int. Cl.[3] **C07C** *177/00*
U.S. Cl. 560—53 **4 Claims**

1. A compound of the formula



wherein D is
(1) —(m—Ph)—$(CH_2)_2$—;or
(2) —(m—Ph)—O—CH_2—,
wherein —(m—Ph)—is inter-meta-phenylene;
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p-Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is —C≡C—.

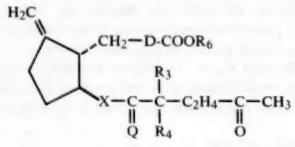
4,260,791

13,14-DIDEHYDRO-INTER-PHENYLENE-11-DEOXY-9-DEOXY-9-METHYLENE-19-OXO-PGF$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979, Pat. No. 4,228,104. This application Mar. 20, 1980, Ser. No. 131,983
Int. Cl.^{3} C07C *177/00*
U.S. Cl. 560—53 **4 Claims**

1. A compound of the formula



wherein D is
(1) —(m—Ph)—$(CH_2)_2$—; or
(2) —(m—Ph)—O—CH_2—,
wherein —(m—PH)—is inter-meta-phenylene;
wherein Q is α-OH:β-R_5 or αR_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p—Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is —C≡C—.

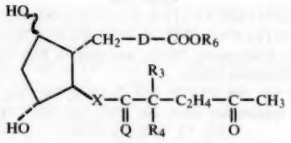
4,260,792

13,14-DIHYDRO-INTER-PHENYLENE-19-OXO-PGF$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979, Pat. No. 4,228,104. This application Mar. 20, 1980, Ser. No. 131,991
Int. Cl.^{3} C07C *177/00*
U.S. Cl. 560—53 **4 Claims**

1. A compound of the formula



wherein D is
(1) —(m—Ph)—$(CH_2)_2$—, or
—(m—Ph)—O—CH_2—,
wherein —(m—Ph)—is inter-meta-phenylene;
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—pH)—CO—CH_3,
(h) —(p—pH)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p—Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is —CH_2CH_2—.

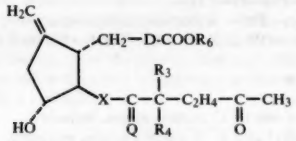
4,260,793

9-DEOXY-9-METHYLENE-INTER-PHENYLENE-19-OXO-PGF$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979, Pat. No. 4,228,401. This application Mar. 20, 1980, Ser. No. 131,994
Int. Cl.^{3} C07C *177/00*
U.S. Cl. 560—53 **4 Claims**

1. A compound of the formula



wherein D is
(1)—(m—Ph)—$(CH_2)_2$—, or
(2)—(m—Ph)—O—CH_2—,
wherein —(m—Ph)— is inter-meta-phenylene;
wherein Q is α—OH:β—R_5 or α—R_5:β—OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—PH)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β—naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p—Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is cis—or trans—CH=CH—.

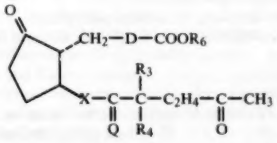
4,260,794

11-DEOXY-INTER-PHENYLENE-19-OXO-PGE$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979, Pat. No. 4,228,104. This application Mar. 20, 1980, Ser. No. 131,999
Int. Cl.[3] **C07C** *177/00*
U.S. Cl. 560—53 **4 Claims**

1. A compound of the formula



wherein D is
(1)—(m—Ph)—$(CH_2)_2$—, or
(2)—(m—Ph)—O—CH_2—,
wherein—(m—Ph)— is inter-meta-phenylene;
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g)—(p—Ph)—CO—CH_3,
(h)—(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i)—(p—Ph)—NH—CO—(p—Ph),
(j)—(p—Ph)—NH—CO—CH_3,
(k)—(p—Ph)—NH—CO—NH_2,
(l)—(p—Ph)—CH=N—NH—CO—NH_2,
(m)β-naphthyl,
(n)—CH_2—CO—R_{28},
wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is cis- or trans—CH=CH—.

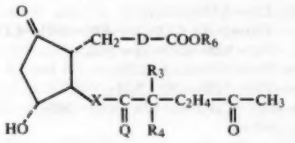
4,260,795

INTER-PHENYLENE-19-OXO-PGE$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979, Pat. No. 4,228,104. This application Mar. 20, 1980, Ser. No. 131,992
Int. Cl.[3] **C07C** *177/00*
U.S. Cl. 560—53 **4 Claims**

1. A compound of the formula



wherein D is
(1) —(m—Ph)—$(CH_2)_2$—, or
(2) —(m—Ph)—O—CH_2—,
wherein —(m—Ph)— is inter-meta-phenylene;
wherein Q is α-OH:β—R_5 or α-R_5:β—OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(j) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p—Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is cis- or trans-CH=CH—.

4,260,796

INTER-PHENYLENE-19-OXO-PGF$_1$ COMPOUNDS

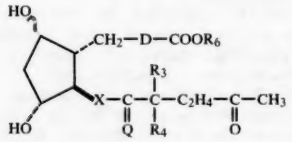
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979, Pat. No. 4,228,104. This application Mar. 20, 1980, Ser. No. 131,993

Int. Cl.[3] **C07C** *177/00*

U.S. Cl. 560—53 **4 Claims**

1. A compound of the formula



wherein D is

(1) —(m—Ph)—$(CH_2)_2$—, or

(2) —(m—Ph)—O—CH_2—,

wherein —(m—Ph)— is inter-meta-phenylene;

wherein Q is α—OH:β—R_5 or α—R_5:β—OH, wherein R_5 is hydrogen or methyl;

wherein R_6 is

(a) hydrogen,

(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,

(g) —(p—Ph)—CO—CH_3,

(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,

(i) —(p—Ph)—NH—CO—(p—Ph),

(j) —(p—Ph)—NH—CO—CH_3,

(k) —(p—Ph)—NH—CO—NH_2,

(l) —(p—Ph)—CH=N—NH—CO—NH_2,

(m) β-naphthyl,

(n) —CH_2—CO—R_{28},

wherein (p—Ph) is para-phenyl or inter-para-phenylene,

wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and

wherein X is cis- or trans-CH=CH—.

4,260,797

9-DEOXY-9-METHYLENE-11-DEOXY-11-HYDROXYMETHYL-INTER-PHENYLENE-19-OXO-PGF$_1$ COMPOUNDS

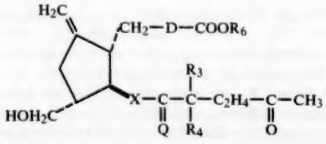
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979, Pat. No. 4,228,104. This application Mar. 20, 1980, Ser. No. 131,997

Int. Cl.[3] **C07C** *177/00*

U.S. Cl. 560—53 **4 Claims**

1. A compound of the formula



wherein D is

(1) —(m—Ph)—$(CH_2)_2$—, or

(2) —(m—Ph)—O—CH_2—,

wherein —(m—Ph)— is inter-meta-phenylene;

wherein Q is α-OH: β-R_5 or α-R_5: β-OH, wherein R_5 is hydrogen or methyl;

wherein R_6 is

(a) hydrogen,

(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,

(g) —(p—Ph)—CO—CH_3,

(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,

(i) —(p—Ph)—NH—CO—(p—Ph),

(j) —(p—Ph)—NH—CO—CH_3,

(k) —(p—Ph)—NH—CO—NH_2,

(l) —(p—Ph)—CH=N—NH—CO—NH_2,

(m) β-naphthyl,

(n) —CH_2—CO—R_{28},

wherein (p-Ph) is para-phenyl or inter-para-phenylene,

wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein R_3 and R_4 are hydrogen, methyl, fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and

wherein X is cis- or trans-CH=CH—.

4,260,798

13,14-DIHYDRO-INTER-PHENYLENE-9-DEOXY-9-METHYLENE-19-OXO-PGF$_1$ COMPOUNDS

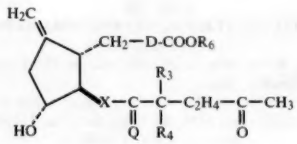
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979, Pat. No. 4,228,104. This application Mar. 20, 1980, Ser. No. 132,222

Int. Cl.[3] **C07C** *177/00*

U.S. Cl. 560—53 **4 Claims**

1. A compound of the formula



wherein D is

(1) —(m—Ph)—$(CH_2)_2$—, or

(2) —(m—Ph)— O—CH_2—,

wherein —(m—Ph)— is inter-meta-phenylene;

wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;

wherein R_6 is

(a) hydrogen,

(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,

(g) —(p—Ph)—CO—CH_3,

(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,

(i) —(p—Ph)—NH—CO—(p—Ph),

(j) —(p—Ph)—NH—CO—CH_3,

(k) —(p—Ph)—NH—CO—NH_2,

(l) —(p—Ph)—CH=N—NH—CO—NH_2,

(m) β-naphthyl,

(n) —CH_2—CO—R_{28},

wherein (p—Ph) is para-phenyl or inter-para-phenylene,

wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and

wherein X is $—CH_2CH_2—$.

4,260,799

13,14-DIHYDRO-INTER-PHENYLENE-11-DEOXY-11-HYDROXYMETHYL-19-OXO-PGF$_1$ COMPOUNDS

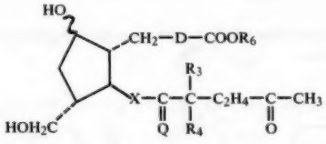
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,221

Int. Cl.^{3} C07C *177/00*

U.S. Cl. 560—53 **4 Claims**

1. A compound of the formula



wherein D is

(1) —(m—Ph)—$(CH_2)_2$—, or

(2) —(m—Ph)—O—CH_2—,

wherein -(m-Ph)- is inter-meta-phenylene;

wherein Q is α-OH:β-R_5 or α-R_5:β—OH, wherein R_5 is hydrogen or methyl;

wherein R_6 is

(a) hydrogen,

(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,

(g) -(p—Ph)—CO-CH_3,

(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,

(i) —(p—Ph)—NH—CO—(p—Ph),

(j) —(p—Ph)—NH—CO—CH_3,

(k) —(p—Ph)—NH—CO—NH_2,

(l) —(p—Ph)—CH=N—NH—CO—NH_2,

(m) β-naphthyl,

(n) -CH_2-CO-R_{28},

wherein (p-Ph) is para-phenyl or inter-para-phenylene,

wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and

wherein X is $—CH_2CH_2—$.

4,260,800

13,14-DIHYDRO-INTER-PHENYLENE-11-DEOXY-9-DEOXY-9-METHYLENE-19-OXO-PGF$_1$ COMPOUNDS

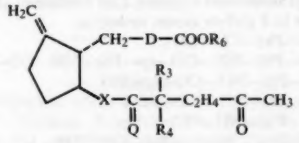
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979, Pat. No. 4,228,104. This application Mar. 20, 1980, Ser. No. 132,224

Int. Cl.^{3} C07C *177/00*

U.S. Cl. 560—53 **4 Claims**

1. A compound of the formula



wherein D is

(1)-(m-Ph)—$(CH_2)_2$—, or

(2) -(m-Ph)—O—CH_2—,

wherein -(m-Ph)- is inter-meta-phenylene;

wherein Q is α—OH:β—R_5 or α—R_5:β—OH, wherein R_5 is hydrogen or methyl;

wherein R_6 is

(a) hydrogen,

(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,

(g) -(p-Ph)—CO—CH_3,

(h) -(p-Ph)—NH—CO—(p-Ph)-NH—CO—CH_3,

(i) -(p-Ph)—NH—CO-(p-Ph),

(j) -(p-Ph)—NH—CO—CH_3,

(k) -(p-Ph)—NH—CO—NH_2,

(l) -(p-Ph)—CH=N—NH—CO—NH_2,

(m) β-naphthyl,

(n) —CH_2—CO—R_{28},

wherein (p-Ph) is para-phenyl or inter-para-phenylene,

wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and

wherein X is $—CH_2CH_2—$.

4,260,801

13,14-DIHYDRO-INTER-PHENYLENE-11-DEOXY-19-OXO-PGF$_1$ COMPOUNDS

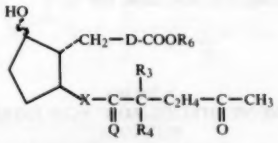
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979, Pat. No. 4,228,104. This application Mar. 20, 1980, Ser. No. 132,238

Int. Cl.^{3} C07C *177/00*

U.S. Cl. 560—53 **4 Claims**

1. A compound of the formula



wherein D is

(1) —(m—Ph)—$(CH_2)_2$—, or

(2) —(m-Ph)—0—CH_2—,

wherein —(m—Ph)—is inter-meta-phenylene;

wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen ormethyl;

wherein R_6 is

(a) hydrogen,

(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},

wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and

wherein X is —CH_2CH_2—.

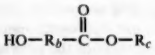
4,260,802

CATALYTIC AROMATIC SALICYLATE PROCESS

John E. Hallgren, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 11, 1979, Ser. No. 37,636
Int. Cl.³ C07C *69/88, 68/00*
U.S. Cl. 560—71 **21 Claims**

1. A catalytic process for the preparation of (1) an aromatic salicylate of the formula



wherein the R_b and R_c radicals are derived from the aromatic R_a portion of the phenol of the formula R_a—$(OH)_x$ defined hereafter wherein R_b represents an aromatic radical with a hydroxyl radical positioned ortho relative to the carboxylate radical associated with the aromatic R_c radical, wherein independently each R_b and R_c is a carbo-monocyclic, carbo-polycyclic or fused carbo-polycyclic radical which comprises (2) contacting a phenol of the formula R_a—$(OH)_x$, wherein R_a is a carbo-monocyclic, carbo-polycyclic, or fused carbo-polycyclic aromatic radical, x is a number at least equal to 1, carbon monoxide, a base, and a Group VIIIB element selected from ruthenium, rhodium, palladium, osmium, iridium or platinum, and an oxidant having an oxidation potential greater than that of the Group VIIIB element wherein the reaction is carried out at a temperature of at least about 100° C.

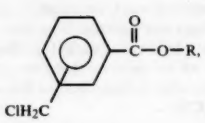
4,260,803

CHLOROMETHYLBENZOIC ACID ESTERS OF PHENOLS

Egon N. Petersen, Neunkirchen-Seelscheid, Fed. Rep. of Germany, assignor to Dynamit Nobel Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 804,837, Jun. 8, 1977, abandoned, which is a continuation of Ser. No. 619,351, Oct. 3, 1975, abandoned. This application Jul. 2, 1979, Ser. No. 53,886
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1974, 2447385
Int. Cl.³ C07C *69/773*
U.S. Cl. 560—108 **8 Claims**

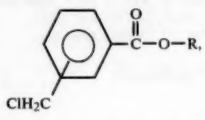
1. A chloromethylbenzoic acid phenyl ester of the formula:



I

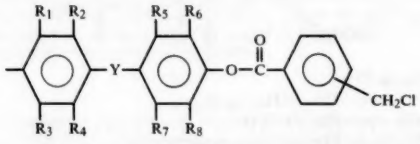
wherein the chloromethyl group is ortho or para and R is phenyl substituted by halogen or phenyl substituted by halogen and alkyl of 1 to 6 carbon atoms.

8. A chloromethylbenzoic acid phenyl ester of the formula:



I

wherein the chloromethyl group is ortho or para, and R is of the formula:



the chloromethyl group is ortho or para, and Y is alkyl of 1–4 carbon atoms, oxygen, sulfur, or SO_2, and R_1 to R_8 is each of the group hydrogen, alkyl of 1–6 carbon atoms, mononuclear aryl, benzyl, alkoxy of 1–4 carbon atoms, mononuclear aroxy, mononuclear aralkoxy, halogen and nitro.

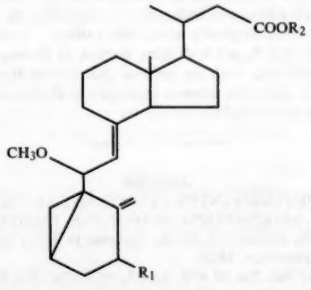
4,260,804

PROCESSES FOR PREPARING CALCITROIC ACID AND ESTERS THEREOF

Hector F. DeLuca; Heinrich K. Schnoes, both of Madison, Wis., and Robert P. Esvelt, Rice, Wash., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Feb. 20, 1980, Ser. No. 122,921
Int. Cl.³ C07C *61/12, 61/28, 69/74*
U.S. Cl. 560—117 **9 Claims**

1. Compounds having the formula



where R_1 is selected from the group consisting of hydrogen, hydroxy, O-acyl, O-methoxymethyl, O-alkylsilyl or O-tetrahydropyranyl and where R_2 is hydrogen, alkyl or benzyl.

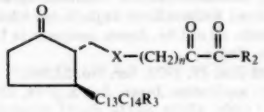
4,260,805

1-DESCARBOXY-1-KETOESTER (KETOACID)-PROSTAGLANDINS

Middleton B. Floyd, Jr., Suffern, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

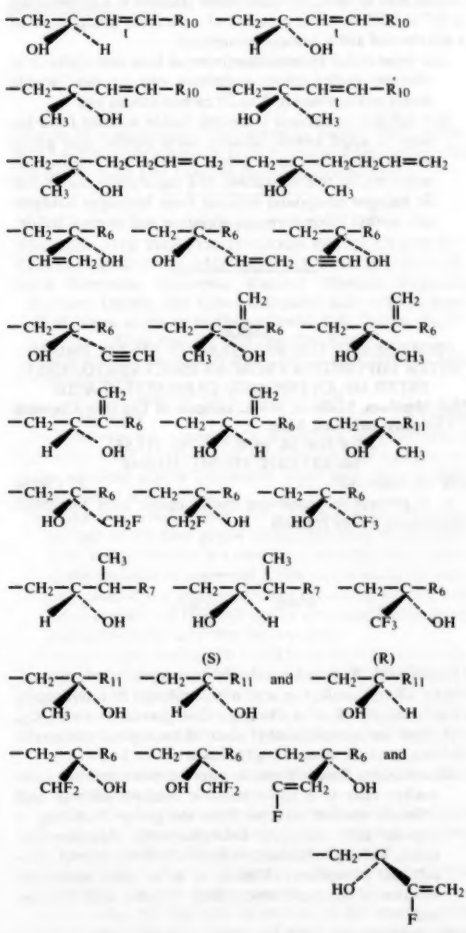
Filed Sep. 27, 1979, Ser. No. 79,621
Int. Cl.³ C07C *177/00*
U.S. Cl. 560—118 **59 Claims**

1. A compound of the formula



Ib

wherein R_2 is selected from the group hydroxy and C_1 to C_7 alkoxy; X is selected from the group cis or trans —CH=CH—; C_{13}–C_{14} is trans —CH=CH—; n is the integer 3, 4 or 5; and R_3 is selected from the group



wherein R_6 is C_3 to C_5 alkyl, R_7 is C_2 to C_4 alkyl, R_{10} is C_1 to C_4 alkyl and R_{11} is C_3 to C_7 alkyl, the racemic mixtures thereof, the mirror images thereof and where R_2 is hydroxy, the pharmaceutically acceptable salts thereof.

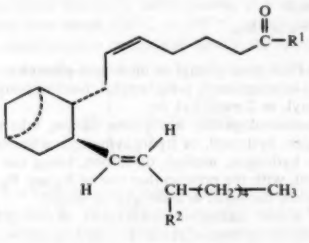
4,260,806

CARBOCYCLIC THROMBOXANE A_2 ANALOGUES

Kyriacos C. Nicolaou, Havertown, Pa.; Ronald L. Magolda, Vineland, N.J., and David A. Claremon, Philadelphia, Pa., assignors to Research Corporation, New York, N.Y.

Filed Oct. 24, 1979, Ser. No. 87,678
Int. Cl.³ C07C *57/26, 103/19*
U.S. Cl. 560—118 **12 Claims**

1. Stable biologically active thromboxane A_2 analogues having the formula:



wherein

R^1 is OR^3, where R^3 represents hydrogen or a pharmaceutically acceptable cation or lower alkyl group; or

R^1 is NR^4R^5 where R^4 and R^5 are the same or different substituents selected from the group consisting of hydrogen and lower alkyl group; and

R^2 is hydrogen or an —OH group.

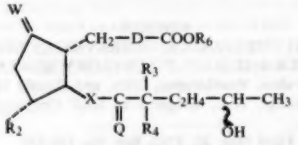
4,260,807

19-HYDROXY-INTER-OXA-PG_1 COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,899, Apr. 2, 1979, Pat. No. 4,228,104. This application Oct. 26, 1979, Ser. No. 88,442
Int. Cl.³ C07C *177/00*
U.S. Cl. 560—121 **2 Claims**

1. A compound of the formula



wherein D is

(1) —$(CH_2)_3$—O—CH_2—,

(2) —$(CH_2)_2$—O—$(CH_2)_2$—, or

(3) —CH_2—O—$(CH_2)_3$—,

wherein Q is α-OH:β-R_5 or α-R_5:β-OH,

wherein R_5 is hydrogen or methyl,

wherein R_6 is

(a) hydrogen,

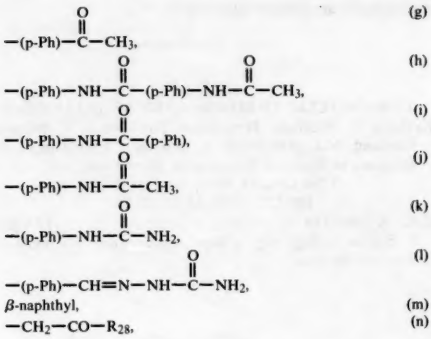
(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive;



wherein (p-Ph)is para-phenyl or inter-para-phenylene and R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation; wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl; wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein W is oxo, methylene, α-OH:β-H, or α-H:β-OH; and wherein X is cis- or trans-CH=CH—, or —C≡C—.

4,260,808

CATALYTIC PROCESS FOR THE CONVERSION OF TOLUENE TO EQUIMOLAR AMOUNTS OF PHENOL ACETATE AND METHYLENE DIACETATE

James E. Lyons, Wallingford; George Suld, Springfield, and Robert W. Shinn, Aston, all of Pa., assignors to Suntech, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 945,747, Sep. 25, 1978, abandoned. This application Nov. 3, 1978, Ser. No. 957,273

Int. Cl.[3] **C07C** *67/05*

U.S. Cl. 560—131 **13 Claims**

1. In the process for the oxidation of toluene with air or oxygen in the liquid phase under elevated pressures and temperatures in the presence of a strong acid catalyst and acetic anhydride to form phenyl acetate, the improvement wherein the reaction is carried out in a closed system whereby no reaction effluent is removed, thereby forming methylene diacetate in approximately equimolar amounts with the said phenyl acetate, together with minor amounts of acetic acid.

4,260,809

COPOLYMERIZABLE, ULTRAVIOLET LIGHT ABSORBER 4-ALKOXY-2'-ACRYLOXY BENZAZINES

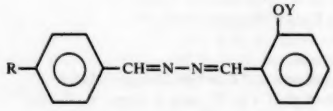
Bruce A. Gruber, Worthington, Ohio, and Donald H. Lorenz, Basking Ridge, N.J., assignors to GAF Corporation, New York, N.Y.

Filed Mar. 20, 1980, Ser. No. 132,195

Int. Cl.[3] **C07C** *69/54*

U.S. Cl. 560—138 **6 Claims**

1. Copolymerizable ultraviolet light absorber compounds having the formula:



where

R is alkoxy C_1–C_6; and,

Y is a copolymerizable radical selected from acrylyl, methacrylyl, 3-acrylyloxy-2-hydroxypropyl or 3-methacrylyloxy-2-hydroxypropyl.

4,260,810

PROCESS FOR PREPARING DIESTERS OF DICARBOXYLIC ACIDS

Sumio Umemura; Kanenobu Matsui; Yoshinari Ikeda; Katsuro Masunaga; Takumi Kadota; Kozo Fujii; Keigo Nishihira, and Masaoki Matsuda, all of Ube, Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed Jun. 27, 1979, Ser. No. 52,341

Claims priority, application Japan, Jul. 3, 1978, 53/79801

Int. Cl.[3] **C07C** *67/38, 69/34, 69/75, 69/612*

U.S. Cl. 560—204 **16 Claims**

1. A process for preparing a diester of a dicarboxylic acid having two more carbon atoms than the unsaturated hydrocarbon used as a starting material, which comprises subjecting an unsaturated hydrocarbon, carbon monoxide and an ester of nitrous acid to catalytic vapor phase reaction at a temperature of 50° to 200° C. in the presence of a platinum group metal or a salt thereof and a halogen compound;

said unsaturated hydrocarbon being at least one aliphatic or alicyclic hydrocarbon containing one or two double bonds and containing 2 to 20 carbon atoms; and

said halogen compound is a metal halide selected from halides of alkali metals, alkaline earth metals, iron group metals, platinum group metals, copper, zinc, chromium, antimony, tin and manganese, or a vaporizable, non-metallic halogen compound selected from hydrogen halogenide, methyl chloroformate, phosgene and nitrosyl halide.

4,260,811

PROCESS FOR THE REMOVAL OF CYCLIC IMIDIC ESTER IMPURITIES FROM AN ISOCYANATOALKYL ESTER OF AN ORGANIC CARBOXYLIC ACID

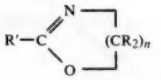
Abel Mendoza, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 14, 1980, Ser. No. 111,557

Int. Cl.[3] **C07C** *119/042, 119/048*

U.S. Cl. 560—218 **12 Claims**

1. A process for removing cyclic imidic ester impurities represented by the formula



wherein each R is independently hydrogen, alkyl, alkenyl, alkoxy, alkaryl, aralkyl or aryl; n is 2 or 3; and R' is hydrogen, a C_1-C_{17} alkyl, a C_2-C_{17} alkenyl, a C_7-C_{20} aralkyl or a C_6-C_{24} aryl, from an isocyanatoalkyl ester of an organic carboxylic acid, said process comprising the steps of:

(a) contacting the cyclic imidic ester-contaminated isocyanatoalkyl ester in a liquid reaction medium with an acid chloride reactant selected from the group consisting of organic acid chlorides, chloroformates, thiochloroformates, sulfonyl chlorides, sulfuryl chloride, thionyl chloride and phosphoryl chloride, so as to effect substantial reaction of the cyclic imidic ester with the acid chloride; and

(b) separating by distillation the isocyanatoalkyl ester from the other components of the reaction mixture produced in step (a).

4,260,812

PROCESS FOR THE PREPARATION OF HALOGEN BUTENYL ACRYLATES

Manfred Beck, Odenthal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 18, 1979, Ser. No. 49,073

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1978, 2827323

Int. Cl.[3] C07C *67/10*

U.S. Cl. 560—223 8 Claims

1. In the process for the preparation of halogen butenyl acrylates corresponding to the formula

$$H_2C{=}\underset{\displaystyle R}{\overset{\displaystyle |}{C}}{-}COOCH_2{-}CH{=}CH{-}CH_2{-}X$$

wherein

R represents hydrogen or a C_1–C_4 alkyl group; and

X represents a halogen atom;

wherein the improvement comprises reacting in an aqueous organic diphasic system at 10° to 140° C. a salt of acrylic acid of the formula

$$H_2C{=}\underset{\displaystyle R}{\overset{\displaystyle |}{C}}{-}COOM$$

wherein M is ammonium, alkali metal or alkaline earth metal, with 1,4-dihalogen butene-(2) in proportions of 1 mol of acrylic acid salt to from 1 to 7 mol of the dihalogen butene.

4,260,813

PROCESS FOR THE CONTINUOUS PRODUCTION OF ETHYLENE GLYCOL MONOETHYL ETHER ACETATE

Norio Kametaka, Hiratsuka; Kuniomi Marumo, Fujisawa; Kiyonori Tokuda, and Kazuo Sekiguchi, both of Shinnanyo, all of Japan, assignors to Showa Denko K.K., Tokyo, Japan

Filed Jan. 31, 1979, Ser. No. 8,341

Claims priority, application Japan, Feb. 2, 1978, 53-9894; Feb. 2, 1978, 53-9896

Int. Cl.[3] C07C *67/03, 67/54*

U.S. Cl. 560—234 9 Claims

1. A process for continuously producing ethylene glycol monoethyl ether acetate by an ester-interchange reaction between ethylene glycol monoethyl ether and ethyl acetate, which comprises

(1) subjecting ethyl acetate and a stoichiometrically excess amount of ethylene glycol monoethyl ether to the ester-interchange reaction in a reaction zone in the liquid phase in the presence of a strongly acidic cation exchange resin as a catalyst at a temperature not exceeding 100° C., said ethyl acetate and ethylene glycol monoethyl ether being continuously fed into the reaction zone;

(2) continuously sending the liquid reaction mixture from the reaction zone to a distillation column and distilling the mixture to separate it into

(a) an overhead fraction which is an azeotrope of unreacted ethyl acetate and a part of by-product ethanol,

(b) a liquid side stream fraction from an upper stage of the column whose major component is a majority of the remaining by-product ethanol,

(c) another liquid side stream fraction from another upper stage of the column whose major component is unreacted ethylene glycol monoethyl ether, and

(d) a bottom fraction comprising the resulting ethylene glycol monoethyl ether acetate;

(3) recycling the fractions (a) and (c) to the reaction zone together with a fresh supply of ethyl acetate and ethylene glycol monoethyl ether;

(4) recovering the fraction (d) as a product; and

(5) sending the fraction (b) to another distillation system and distilling it to recover by-product ethanol.

4,260,814

PREPARATION OF ESTERS BY THE THERMAL DECOMPOSITION OF A BIS(2-BROMOALKYL)TELLURIUM DICARBOXYLATE COMPOUND

Jar-lin Kao, and Ming N. Sheng, both of Cherry Hill, N.J., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jul. 23, 1979, Ser. No. 59,729

Int. Cl.[3] C07C *67/00, 69/14, 69/24*

U.S. Cl. 560—266 5 Claims

1. A process for the preparation of 2-bromoalkyl esters which comprises thermally decomposing at a temperature in the range of from about 100° C. to 200° C. a bis(2-bromoalkyl)-tellurium dicarboxylate compound having the formula

$$(BrC(R)-CH(R))_2Te(OCR')_2$$

wherein R is hydrogen or a methyl group, at least one R being a hydrogen and R′ is hydrogen or an alkyl group having 1 to 3 carbon atoms, in the presence of an acetonitrile solvent.

4,260,815

PROCESS FOR PREPARING A SOLUTION OF DL-MANDELIC ACID

John Kazan, Bridgewater, and Chen S. Yu, Middlesex, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 9, 1979, Ser. No. 83,183

Int. Cl.[3] C07B *20/00*

U.S. Cl. 562—401 4 Claims

1. A process for preparing a solution of DL-mandelic acid consisting essentially of:

(a) heating optically active 2-amino-1-butanol mandelate and an alkalizing agent in a lower aliphatic alcohol or alcohol mixture, or in a lower aliphatic alcohol and water, until racemization is essentially complete;

(b) neutralizing the resulting solution with a mineral acid or a mineral acid salt of 2-amino-1-butanol and mandelic acid in said lower aliphatic alcohol or alcohol mixture to precipitate an alkali or alkaline earth metal salt;

(c) separating said metal salt; and

(d) recovering the resulting DL-mandelic acid racemic solution.

4,260,816

NAPHTHYLOXYALKYLAMINOBENZOIC ACIDS, SALTS AND ESTERS THEREOF

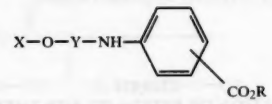
Jay D. Albright, Nanuet; Thomas G. Miner, Chester, and Robert G. Shepherd, South Nyack, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 891,655, Mar. 30, 1978, abandoned, which is a continuation of Ser. No. 760,600, Jan. 19, 1977, abandoned, which is a continuation-in-part of Ser. No. 639,018, Dec. 9, 1975, abandoned. This application Jul. 20, 1979, Ser. No. 59,915

Int. Cl.[3] C07C *101/60, 101/58*

U.S. Cl. 562—452 10 Claims

1. A compound of the formula:



wherein Y is a straight-chain or branched alkylene group of the formula C_nH_{2n} wherein n is an integer from 2 to 12, inclusive; R is hydrogen, lower alkyl, phenyl, p-chlorophenyl, benzyl, lower alkoxyethyl, 3-(lower alkoxy)-2-hydroxypropyl, 2,3-dihydroxypropyl, 3-(lower alkanoyl)oxy-2-hydroxypropyl or pyridylmethyl; and X is naphthyl, 1,2,3,4-tetrahydronaphthyl or naphthyl substituted with halo, cyano, carbamoyl, carboxy, lower alkanoyl, lower alkoxy, lower alkanoylamino, lower alkanosulfonamido or sulfamyl; the pharmacologically acceptable acid-addition salts thereof; and the pharmacologically acceptable cationic salts thereof.

4,260,817

PROCESS FOR THE PURIFICATION OF TEREPHTHALIC ACID

David T. Thompson, Whitchurch Hill; Alfred J. Bird, Hounslow, and Edward J. Pearson, Caversham Park Village, all of England, assignors to Johnson, Matthey & Co., Limited, London, England

Continuation of Ser. No. 774,042, Mar. 3, 1977, abandoned. This application Oct. 17, 1978, Ser. No. 952,140

Claims priority, application United Kingdom, Mar. 5, 1976, 8932/76

Int. Cl.³ C07C *51/42*

U.S. Cl. 562—487 **9 Claims**

1. In a catalytic process for purifying terephthalic acid prepared by catalytic oxidation of p-xylene and which includes 4-carboxybenzaldehyde and terephthaldehyde as aldehydic impurities, said purification process involving catalytically hydrogenating the impure terephthalic acid to convert 4-carboxybenzaldehyde and terephthaldehyde therein to p-toluic acid and p-xylene, respectively, by a reaction mechanism which involves first converting the aldehyde (CHO) groups to alcohol (CH_2OH) groups and then converting the latter to methyl (CH_3) groups, the improvement comprising carrying out the hydrogenation of the impure terephthalic acid by contacting an aqueous solution of the impure acid with hydrogen gas, as the sole gaseous reactant, in the presence of a catalyst selected from one of the following metal combinations:

palladium : ruthenium
palladium : osmium
palladium : iridium
palladium : rhodium
palladium : platinum
platinum : rhodium
palladium : iron
palladium : nickel
palladium : cobalt
palladium : chromium
palladium : manganese
palladium : uranium,

said catalyst functioning to improve the speed at which the alcohol groups are converted to methyl groups without markedly affecting the speed of the initial conversion of aldehyde groups to alcohol groups.

4,260,818

16-SUBSTITUTED PROSTAGLANDINS

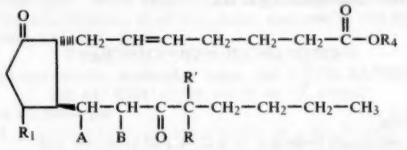
George W. Holland, and Perry Rosen, both of North Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 27,589, Apr. 6, 1976, Pat. No. 4,212,993, which is a division of Ser. No. 813,068, Jul. 5, 1977, abandoned. This application Dec. 3, 1979, Ser. No. 99,308

Int. Cl.³ C07C *177/00*

U.S. Cl. 562—503 **2 Claims**

1. A compound of the formula:



wherein A and B taken together form a carbon to carbon bond; R_4 is hydrogen or lower alkyl; R_1 is lower alkyl; R' is fluoro, lower alkyl or trifluoromethyl; R is hydrogen, fluoro, or lower alkyl;

or their optical antipodes or racemates thereof.

4,260,819

19-HYDROXY-19-METHYL-CIS-4,5-DIDEHYDRO-PG$_1$ COMPOUNDS

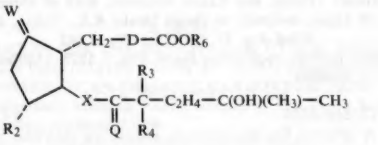
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,878, Apr. 2, 1979, abandoned. This application Mar. 24, 1980, Ser. No. 133,206

Int. Cl.³ C07C *177/00*

U.S. Cl. 562—503 **2 Claims**

1. A compound of the formula



wherein D is cis—CH_2—CH=CH—CH_2—CH_2—,

wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;

wherein R_6 is

(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p-Ph)—CO—CH_3,
(h) —(p-Ph)—NH—CO—(p-Ph)—NH—CO—CH_3,
(i) —(p-Ph)—NH—CO—(p-Ph),
(j) —(p-Ph)—NH—CO—CH_3,
(k) —(p-Ph)—NH—CO—NH_2,
(l) —(p-Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},

wherein (p-Ph) is para-phenyl or inter-para-phenylene,

wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation; wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl; wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein W is oxo, methylene, α-OH:β-H, or α-H:β-OH; and wherein X is cis- or trans—CH=CH— or —C≡C—.

4,260,820

METHOD OF PREPARING ALIPHATIC CARBOXYLIC ACIDS

John F. Knifton, Austin, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

Filed Sep. 24, 1979, Ser. No. 77,970
Int. Cl.[3] C07C *51/12*
U.S. Cl. 562—517 10 Claims

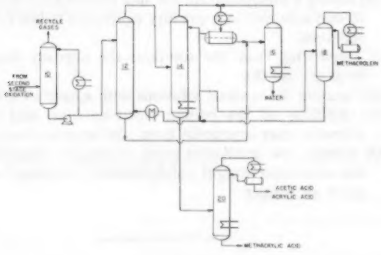
1. A process of preparing higher homologues of aliphatic carboxylic acids containing 2–6 carbon atoms which comprises the steps of contacting said aliphatic acid starting material with at least a catalytic amount of a ruthenium-containing compound in the presence of an iodide or bromide promoter and heating the resultant reaction mixture at 100°–350° C. under superatmospheric pressures of 500 psi or greater with sufficient carbon monoxide and hydrogen to satisfy the stoichiometry of the desired higher carboxylic acid homologues, until substantial formation of the desired acids containing at least 3 carbon atoms has been achieved, and recovering said desired acids.

4,260,821

MINIMIZING POLYMERIZATION DURING RECOVERY OF METHACRYLIC ACID

Bruce W. Benjamin, Fair Lawn, N.J., assignor to Halcon Research and Development Corp., New York, N.Y.

Filed Mar. 15, 1979, Ser. No. 20,562
Int. Cl.[3] B07D *3/34;* C07C *15/235*
U.S. Cl. 562—532 2 Claims



1. In the process for preparation of methacrylic acid by the vapor phase oxidation of methacrolein with molecular oxygen in the presence of a catalyst and the recovery of said methacrylic acid by quenching and condensing the effluent of said oxidation with crude methacrylic acid solution and extracting the methacrylic acid by a solvent and distilling said solvent from said crude methacrylic acid solution and purifying methacrylic acid from said crude solution, the improvement comprising carrying out said distilling and purifying of crude methacrylic acid in the presence of an effective amount of polymerization inhibitor and introducing molecular oxygen into liquid methacrylic acid-containing solutions at a rate expressed as SLH O_2/100 g of liquid above about 0.1.

4,260,822

PROCESS FOR THE PRODUCTION OF UNSATURATED ACIDS

Harold Krieger, Philadelphia, and Lawrence S. Kirch, Huntingdon Valley, both of Pa., assignors to Rohm and Haas Company, Phialdelphia, Pa.

Filed Oct. 30, 1978, Ser. No. 956,011
Int. Cl.[3] C07C *51/215, 57/05*
U.S. Cl. 562—549 12 Claims

1. A process for producing methacrylic or acrylic acid comprising the steps of contacting in the vapor phase and at a temperature of from about 200° C. to about 450° C., an oxygen and alkane containing feed gas wherein said alkane is selected from the class consisting of isobutane and propane, said alkane being present in said feed gas in an amount of from about 10 to about 70 mol. percent with a catalyst consisting of Mo_x, Sb_y, and P_z in combination with oxygen wherein x, y and z represent the atomic ratio and x is from about 9 to about 24, y is from about 0.25 to about 2, and z is from about 0.75 to about 2 and removing methacrylic or acrylic acid from the contacted feed gas.

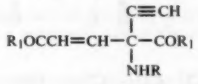
4,260,823

α-ACETYLENIC DERIVATIVES OF α-AMINO ACIDS

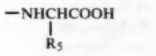
Patrick J. Casara, Strasbourg; Michel Jung, Illkirch Graffenstaden, and Brian W. Metcalf, Strasbourg, all of France, assignors to Merrell Toruade et Compagnie, Strasbourg, France

Continuation of Ser. No. 812,114, Jul. 1, 1977, abandoned. This application Jul. 2, 1979, Ser. No. 54,167
Int. Cl.[3] C07C *101/20, 101/26, 101/28, 101/72*
U.S. Cl. 562—571 6 Claims

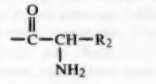
1. A compound of the formula



wherein each R_1 is the same and is hydroxy, a straight or branched alkoxy group of from 1 to 8 carbon atoms, $-NR_3R_4$ wherein each R_3 and R_4 is hydrogen or a lower alkyl group of from 1 to 4 carbon atoms and can be the same or different, or



wherein R_5 is hydrogen, a straight or branched lower alkyl group of from 1 to 4 carbon atoms, benzyl or p-hydroxybenzyl; and R is hydrogen, alkylcarbonyl wherein the alkyl moiety has from 1 to 4 carbon atoms and is straight or branched, alkoxycarbonyl wherein the alkoxy moiety has from 1 to 4 carbon atoms and is straight or branched or



wherein R_2 is hydrogen, a straight or branched lower alkyl group of from 1 to 4 carbon atoms, benzyl or p-hydroxybenzyl; and pharmaceutically acceptable salts and individual optical isomers thereof.

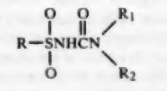
4,260,824

SULFONYLUREA HERBICIDAL ANTIDOTES

Edmund J. Gaughan, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Sep. 21, 1979, Ser. No. 77,881
Int. Cl.[3] C07C *143/833;* A01N *47/34*
U.S. Cl. 564—42 3 Claims

1. A compound of the formula



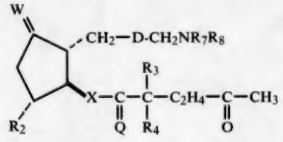
in which
R is selected from the group consisting of 1–4 carbon alkyl, phenyl, and methyl substituted phenyl;
R_1 is selected from the group consisting of hydrogen and 1–4 carbon alkyl; and
R_2 is 3–6 carbon alkynyl.

4,260,825
2-DECARBOXY-2-AMINOMETHYL-19-KETO-PG COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979, abandoned. This application Mar. 20, 1980, Ser. No. 132,350
Int. Cl.³ C07C *87/28*
U.S. Cl. 564—384 **5 Claims**

1. A compound of the formula



wherein D is
(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(3) cis—CH_2—CH=CH—CH_2—CH_2—,
(4) trans—$(CH_2)_3$—CH=CH—,
(5) —$(CH_2)_3$—$(CH_2)_g$—CH_2—,
(6) —$(CH_2)_3$—CH_2—CF_2—,
(7) —$(CH_2)_3$—O—Ch_2—,
(8) —(CH_2)—O—$(CH_2)_2$—,
(9) —CH_2—O—$(CH_2)_3$—,
(10) —(m-Ph)—$(CH_2)_2$—, or
(11) —(m-Ph)—O—CH_2—,
wherein —(m—Ph)—is inter-meta-phenylene and
wherein g is zero, one, two, or three;
wherein Q is α—OH:β—R_5 or α—R_5:β—OH, wherein R_5 is hydrogen or methyl;
wherein R_7 and R_8 are hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl, being the same or different;
wherein R_2 is hydrogen, hydroxyl, or hydroxylmethyl,
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein W is oxo, methylene, α—OH:β—H, or α—H:β—OH; and
wherein X is cis, or trans—CH=CH—, —C≡C—or —CH_2CH_2—.

4,260,826
NOVEL ONIUM SURFACTANTS

Robert F. Harris, Midland, Mich., and Earl H. Wagener, Concord, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 895,558, Apr. 12, 1978, Pat. No. 4,175,196, which is a division of Ser. No. 416,308, Nov. 15, 1973, Pat. No. 4,093,663. This application May 29, 1979, Ser. No. 43,410
Int. Cl.³ C07F *9/54*
U.S. Cl. 568—11 **12 Claims**

9. An onium surfactant corresponding to the formula $X[(CH_2CH_2O)_mCH_2—R—CHR'—Q^{\oplus}A^{\ominus}]_n$, wherein X is a hydrophobic n-valent radical derived by the removal of n-atoms of active hydrogen from an alkanol, alkenol, alkylphenol, alkanoic acid or amide of an alkanoic acid having from about 10 to about 24 carbon atoms or a polymer of propylene oxide and/or butylene oxide and corresponds to the hydrophobic portion of a nonionic surfactant having a hydrophilic-lipophilic-balance of from 1 to about 30 and having the structural formula $X[(CH_2CH_2O)_mH]_n$; m is an integer of at least 1 and is the same in each of the above formulae; R is a divalent aromatic hydrocarbon radical of from 6 to about 14 carbon atoms, the chain length of which can be interrupted by oxygen or sulfur atoms; R' is hydrogen or methyl and is methyl only when R is m- or p-phenylene; $Q^{\oplus}$ is a quaternized atom of phosphorus; $A^{\ominus}$ is a compatible anion; and n is an integer of from 1 to 5 and is the same in each of the above formulae.

4,260,827
PROCESS FOR THE PURIFICATION OF AQUEOUS SOLUTIONS OF LOW MOLECULAR WEIGHT POLYHYDROXYL COMPOUNDS

Kurt Klinkmann, and Raimund Wambach, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 17, 1979, Ser. No. 104,406
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1978, 2855038
Int. Cl.³ C07C *27/26, 29/74*
U.S. Cl. 568—414 **2 Claims**

1. A process for the purification of aqueous solutions of low molecular weight polyhydroxyl compounds containing calcium or lead compounds or a mixture of calcium and lead compounds by removing calcium and/or lead compounds comprising:
(a) adding from about 20–300 wt. percent methanol to said solutions,
(b) adding a precipitant for calcium and/or lead compounds to said solutions in a quantity equivalent to the ions to be removed,
(c) separating from the solutions the deposits formed by steps (a) and (b),
(d) treating the residual solutions with a cation exchanger,
(e) distilling off low-boiling fractions from said residual solutions after separation from the cation exchanger, and
(f) treating the distillation sump essentially containing the low molecular weight polyhydroxyl compounds with an anion exchanger.

4,260,828
HYDROFORMYLATION PROCESS

Dennis G. Morrell, Charleston, and Paul D. Sherman, Jr., South Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 762,335, Jan. 25, 1977. This application Apr. 16, 1980, Ser. No. 140,830
Int. Cl.³ C07C *45/50*
U.S. Cl. 568—454 **14 Claims**

1. In a process for hydroformylating an alphaolefin containing 2 to 20 carbon atoms to produce aldehydes having one more carbon atom than the alpha-olefin by reacting the alpha-olefin with hydrogen and carbon monoxide in a liquid reaction medium which contains a soluble rhodium complex catalyst consisting essentially of rhodium complexed with carbon monoxide and a triarylphosphine ligand, and in the presence of free triarylphosphine, the improvement comprising improving the stability of the catalyst by
charging the liquid reaction medium containing the catalyst with from about 0.1 to 20 percent by weight of an alkyldiarylphosphine ligand based on the total weight of the liquid reaction medium, and
controlling the reaction conditions to a temperature of from about 100° to about 140° C., a total gas pressure of hydrogen, carbon monoxide and alpha-olefin of less than about

450 pounds per square inch absolute, carbon monoxide partial pressure of less than about 55 pounds per square inch absolute, a hydrogen partial pressure of less than about 200 pounds per square inch absolute, and at least about 75 moles of total free phosphine ligand for each mole of catalytically-active rhodium metal present in the rhodium complex catalyst which consists essentially of rhodium complexed with carbon monoxide and one or both of said triarylphosphine and said alkyldiarylphosphine.

4,260,829

PREPARATION OF CARBONYL COMPOUNDS

Michael Horner, Neustadt; Axel Nissen, Leimen; Peter R. Laurer, Ludwigshafen; Matthias Irgang, Mannheim, and Heinrich Pasedach, Weisenheim am Berg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

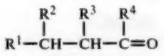
Filed Aug. 17, 1979, Ser. No. 67,706

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1978, 2839474

Int. Cl.[3] **C07C** *45/62*

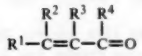
U.S. Cl. 568—462 **4 Claims**

1. In a process for the preparation of a carbonyl compound of the formula (I)



(I)

where R^1 is alkyl or alkenyl of 1 to 20 carbon atoms and R^2 and R^3 are hydrogen or C_1–C_4-alkyl and R^4 is hydrogen, by the selective hydrogenation of the α,β-unsaturated carbonyl compound (II)



(II)

with hydrogen in the presence of a palladium catalyst, an organic solvent and an organic base, in the liquid phase, the improvement which comprises: carrying out the hydrogenation in the presence of from 15 to 50% by weight, based on (II), of an aliphatic tertiary amine of 3 to 30 carbon atoms, wherein as solvent there is used between 25 and 150% by weight of (II) of methanol or ethanol and wherein the water concentration in the reaction mixture does not exceed 5% by weight.

4,260,830

PROCESS FOR THE PREPARATION OF METHYL DIHYDROJASMONATE AND LOWER ALKYL HOMOLOGUES

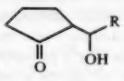
Richard A. Wilson, Westfield; Braja D. Mookherjee, Holmdel; John B. Hall, Rumson, and Gilbert Stork, Englewood, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Jan. 18, 1980, Ser. No. 113,297

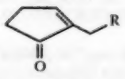
Int. Cl.[3] **C07C** *45/66*

U.S. Cl. 568—485 **2 Claims**

1. The process of reacting the compound having the structure:



with HX in the presence of n-butanol or toluene in order to form, in one step, a compound having the structure:



wherein R is C_1–C_4 alkyl and X is chloro or bromo.

4,260,831

OLIGOMERIZATION OF M-ISOPROPENYLPHENOL

Shunsuke Matsushima, Otsu; Kazuhiko Hata, Niihama; Kentaro Mashita, Ibaraki; Shuichi Kanagawa, Osaka; Shinji Nakao, Sakai; Kiyoshi Nakai, and Kunimasa Kamio, both of Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Mar. 27, 1979, Ser. No. 24,424

Claims priority, application Japan, Apr. 3, 1978, 53-39599; Apr. 4, 1978, 53-40090

Int. Cl.[3] **C07C** *37/14*

U.S. Cl. 568—719 **5 Claims**

1. A process for producing a mixture of m-isopropenylphenol oligomers comprising dimers, trimers and higher oligomers which comprises polymerizing m-isopropenylphenol at a temperature of 140° to 210° C. using a catalytic amount of an acid catalyst selected from the group consisting of boron trifluoride etherate, boron trifluoride alcoholate, boron trifluoride phenolate, sulfuric acid, phosphoric acid, alkylphosphoric acid, alkylsulfonic acid, alkylbenzenesulfonic acid, naphthalenesulfonic acid, monoalkylsulfate, aluminum trichloride, iron chloride, cation exchange resins, activated clay, acid clay, fuller's earth, silicaalumina, sulfuric acid-treated aluminum hydroxide and alkali metal bisulfates of the formula, $MHSO_4$, wherein M is an alkali metal or ammonium, in the presence or absence of a small amount of a hydrocarbon or halogenated hydrocarbon solvent.

4,260,832

ALKYLATION OF 2,6-DI-TERT-ALKYLPHENOLS WITH ALKANEDIOLS

Dane K. Parker, Massillon, and Richard H. Kline, Silver Lake, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 29, 1979, Ser. No. 89,062
Int. Cl.[3] C07C *39/06*
U.S. Cl. 568—784 13 Claims

1. A process for alkylating the nucleus of a phenol, said process comprising reacting an α,ω alkanediol containing from 3 to 8 carbon atoms with a phenol having an unsubstituted nuclear position para to the phenolic hydroxyl group; said phenol being selected from the group of alkylated phenols having tertiary alkyl groups of 4 to 8 carbon atoms in both positions ortho to the phenolic hydroxyl group and in the presence of an alkali metal hydroxide or alkoxide or alkali metal at a temperature of 200°–250° C. at essentially ambient pressure with the removal of the water by-product, to obtain as a product said phenol having a primary hydroxy terminated alkyl group of 3 to 8 carbon atoms in said para position.

4,260,833

PREPARATION OF ALKYLPHENOLS

Bruce E. Firth, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Nov. 30, 1979, Ser. No. 99,222
Int. Cl.[3] C07C *37/11, 37/14*
U.S. Cl. 568—789 2 Claims

1. A process for producing 2,4-di-t-butylphenol which comprises reacting phenol and isobutylene at a temperature from about 150° C. to about 350° C., at a pressure from about 1 to about 250 atmospheres, and for a time period from about 1 to about 20 hours in contact with lithiated alumina to produce said 2,4-di-t-butylphenol as the major product of the process, and recovering the resultant product.

4,260,834

Patent Not Issued For This Number

4,260,835

Patent Not Issued For This Number

4,260,836

SOLVENT EXTRACTION OF ALCOHOLS FROM WATER SOLUTIONS WITH FLUOROCARBON SOLVENTS

Sidney Levy, 145 W. Cuthbert Blvd., Oaklyn, N.J. 08107

Filed Jan. 10, 1980, Ser. No. 110,828
Int. Cl.[3] C07C *29/86*
U.S. Cl. 568—918 9 Claims

1. The process for separating two to five carbon alcohols in aqueous solution comprising the steps of contacting said aqueous solution with a fluorocarbon solvent system to extract said alcohols from said aqueous phase, separating said alcohol rich fluorocarbon solvent phase from said aqueous phase, removing said fluorocarbon solvent from said solution of said alcohols in said fluorocarbon solvent by vacuum evaporation, compressing and cooling said fluorocarbon vapors to produce liquid fluorocarbon solvent and returning said fluorocarbon solvent to the said extraction process wherein the fluorocarbon solvents comprise singly or mixtures of one and two carbon fluorocarbons that boil at temperatures between −41° C. and +48° C., Have vapor pressures at 21° C. between 10 PSIA and 165 PSIA, have heats of vaporization below 60 calories per gram, have a Kauri butanol number of 10 or greater, have a specific heat below 0.28, have a surface tension below 20 dynes per centimeter, have a viscosity below 0.5 centipoise, have a solubility below 1% in water, and have a solubility below 0.2% of water in the fluorocarbon.

4,260,837

RECRYSTALLIZATION OF HEXSANITROSTILBENE FROM NITRIC ACID AND WATER

Joseph C. Dacons, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 3, 1980, Ser. No. 126,269
Int. Cl.[3] C07C *79/10*
U.S. Cl. 568—931 9 Claims

1. A process for producing finely divided 2,2′,4,4′,6,6′-hexanitrostilbene-I (HNS-I) of uniform particle size comprising:

(1) dissolving 2,2′,4,4′,6,6′-hexanitrostilbene-II in hot fuming nitric acid; and then

(2) drowning the fuming nitric acid solution in water;

provided that the ratio of HNO_3 to water is from 1:9 to 4:1 in the final mixture resulting from step (2).

4,260,838

PROCESS OF MAKING NITROPARAFFINS BY NITRATION IN THE GASEOUS PHASE

Pierre Lhonore, Douai; Jacques Quibel, Maisons Laffitte, and Bernard Jacquinot, Douai, all of France, assignors to Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques, Paris, France

Filed Mar. 30, 1979, Ser. No. 25,594
Claims priority, application France, Apr. 4, 1978, 78 09837
Int. Cl.[3] C07C *76/02*
U.S. Cl. 568—947 12 Claims

1. In a process of manufacturing nitroparaffins by nitration in homogeneous gaseous phase under pressure of at least one hydrocarbon, wherein the reactant hydrocarbon to be nitrated comprises propane which is introducted into a reaction zone, the nitrating agent being nitrogen peroxide, nitric acid, alone or in mixture or any agent carrying an easily transferable NO or NO_2 group, the improvement wherein

said homogeneous gaseous phase subjected to nitration further comprises at least one nitroparaffin including 2-nitropropane, whereby a mixture of propane and 2-nitropropane is introduced into the reaction zone.

4,260,839
ETHANE CONVERSION PROCESS

Nai Y. Chen, Titusville; Werner O. Haag, Lawrenceville, and Tracy J. Huang, Trenton, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

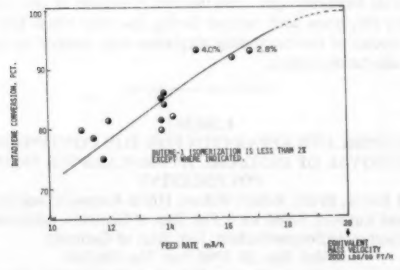
Filed Jul. 16, 1979, Ser. No. 57,924
Int. Cl.³ C07C *9/04, 2/12, 6/10;* **B01J** *29/30*
U.S. Cl. 585—257 **15 Claims**

1. A process for simultaneously effecting an endothermic and an exothermic reaction in a single reaction zone comprising introducing into said reaction zone an ethane-containing charge, contacting said charge under reaction conditions with a mixture of a narrow pore crystalline aluminosilicate zeolite catalyst having a uniform structure characterized by pores, the major dimension of which is less than 6 Angstroms selected from the group consisting of erionite, ferrierite, brewsterite, stilbite, epistilbite, heulandite and clinoptilolite and chabazite and a ZSM-5 type crystalline aluminosilicate zeolite catalyst having a silica to alumina ratio of at least 12 and a constraint index in the approximate range of 1 to 12 each catalyst therein may be modified by the addition of a minor amount of a metal selected from Group IIB in combination with a metal from Group IB or Group VIII of the Periodic Table, and regulating the relative proportions of said catalysts so that the heat evolved from the exothermic reaction serves to maintain the reaction zone at a temperature sufficient to sustain the endothermic reaction, whereby ethane contacting said ZSM-5 type catalyst is converted to C_3+ hydrocarbons and a portion of unconverted ethane which is in contact with said narrow pore crystalline catalyst is converted by by-product hydrogen to methane.

4,260,840
BUTENE-1 CONTAINING FEED PURIFICATION PROCESS(CS-165)

Friedrich H. Puls, Baton Rouge, La., and Klaus D. Ruhnke, Pulheim, Fed. Rep. of Germany, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 11, 1980, Ser. No. 111,245
Int. Cl.³ C07C *5/03*
U.S. Cl. 585—259 **10 Claims**



1. A process for selectively hydrogenating butadiene present as an impurity in a hydrocarbon feed containing at least 30 wt.% butene-1 while minimizing isomerization of butene-1 to butene-2 which comprises contacting the feed with hydrogen in the presence of a solid catalyst comprising palladium on a support wherein the palladium concentration is in the range of from about 0.01 to about 1.0 weight % at a temperature in the range of about 50° to about 90° C., at a pressure sufficient to maintain the hydrocarbons in a mixed liquid-vapor phase, the hydrogen being in a molar excess over theoretical for conversion of the butadiene to butene, of 0.1 to 1.0% based on butene-1, the feed being passed to the catalyst at a mass velocity of more than 1500 lbs./(Sq. ft.×H).

4,260,841
CONVERSION OF OXYGENATED PRODUCTS OF FISCHER-TROPSCH SYNTHESIS

Robert E. Holland, Mullica Hill, and Samuel A. Tabak, Wenonah, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Sep. 4, 1979, Ser. No. 72,819
Int. Cl.³ C10G *25/03, 17/08, 3/00*
U.S. Cl. 585—319 **5 Claims**

1. A process for upgrading a mixture of C_2 plus water soluble oxygenates comprising primarily a mixture of C_5 and lower boiling alcohols, aldehydes, ketones and water which comprises,

distilling the C_2 plus water soluble oxygenates to remove water and acids from a mixture of C_5 and lower boiling alcohols, aldehydes and ketones,

dehydrating the mixture of C_5 and lower boiling alcohols, aldehydes and ketones under conditions to achieve within the range of 25 to 100% conversion thereof to a dehydrated product,

separating a dehydrated product from water and unconverted material, recycling the separated water and unconverted material to the distillation step,

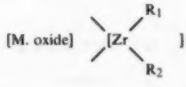
passing the dehydrated product in contact with a special zeolite catalyst characterized by a pore opening of at least 5 Angstroms, a silica-to-alumina ratio of at least 12 and a constraint index within the range of 1 to 12, said contact between said dehydrated product and said zeolite catalyst being effected at a temperature within the range of 400° to 900° F. and a pressure sufficient to produce a product comprising high octane gasoline boiling components and aromatics.

4,260,842
ISOMERIZATION OF OLEFINS UTILIZING HETEROGENEOUS DIOXYZIRCONIUM CATALYSTS

Jeffrey Schwartz, and Michael D. Ward, both of Princeton, N.J., assignors to The Trustees of Princeton University, Princeton, N.J.

Filed Nov. 7, 1979, Ser. No. 91,963
Int. Cl.³ C07C *5/22, 5/23, 5/25*
U.S. Cl. 585—377 **7 Claims**

1. A process for the isomerization of olefins selected from the group consisting of monounsaturated olefins and polyunsaturated olefins containing at least one nonconjugated double bond which comprises contacting said olefin in a substantially anhydrous, oxygen-free environment, with a catalyst of the formula



wherein [M-oxide] is a support phase selected from the group of oxides of group II, group III, group IV, group V and group VI B metals, silica, and germania, R_1 and R_2 are hydrogen or alkyl and may be the same or different.

4,260,843

SHAPE SELECTIVE REACTIONS WITH BERYLIUM-MODIFIED ZEOLITE CATALYSTS

Chin-Chiun Chu, North Brunswick, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Feb. 25, 1980, Ser. No. 124,158

Int. Cl.³ C07C *2/68*

U.S. Cl. 585—467 **14 Claims**

1. A process for conversion of organic compounds, said process comprising contacting said organic compounds with a crystalline zeolite catalyst at a temperature of between about 250° C. and about 750° C. and a pressure within the approximate range of 10^5 N/m^2 to 10^7 N/m^2, said zeolite being characterized by a silica to alumina mole ratio of at least 12 and a constraint index within the approximate range of 1 to 12, said zeolite having undergone prior modification by treatment with one or more compounds containing element beryllium to deposit thereon at least 0.25 weight percent of such element.

4,260,844

NICKEL COMPLEXES IN DIOL SOLVENTS AND THEIR USE AS OLIGOMERIZATION CATALYST PRECURSORS

Albert E. O'Donnell, and Clarence Gum, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 30, 1980, Ser. No. 116,687

Int. Cl.³ C07C *2/02*

U.S. Cl. 585—523 **16 Claims**

1. A process of oligomerizing ethylene to linear, alpha olefins which comprises reacting ethylene in an aliphatic diol solvent in an oligomerization reaction zone at elevated pressure with a nickel complex catalyst composition produced by combining in the reaction zone (a) a stable preformed complex of nickel, ethylene and hydride in an aliphatic diol solvent, said complex being prepared by contacting in the diol solvent and in the presence of ethylene (1) a simple divalent nickel salt (2) a base and (3) a boron hydride transfer agent and (b) a suitable bidentate ligand; the stable nickel complex in diol solvent and the bidentate ligand being added in separate portions to the reaction zone.

4,260,845

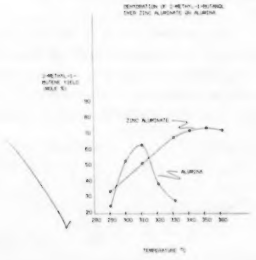
ALCOHOL DEHYDRATION EMPLOYING A ZINC ALUMINATE CATALYST

Tod K. Shioyama, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 21, 1980, Ser. No. 113,948

Int. Cl.³ C07C *1/00*

U.S. Cl. 585—640 **15 Claims**



1. The dehydration to an olefin of a dehydratable saturated alcohol which comprises subjecting the same to dehydrating conditions in the presence of a zinc aluminate dehydration catalyst having an approximate molar ratio of ZnO to Al_2O_3 of one, said catalyst having been heated in air for a sufficient time and at a sufficient temperature to form a catalytically active zinc aluminate suitable for said dehydration.

4,260,846

CONTINUOUS CYCLIC PROCESS FOR ALKYLATION OF HYDROCARBONS

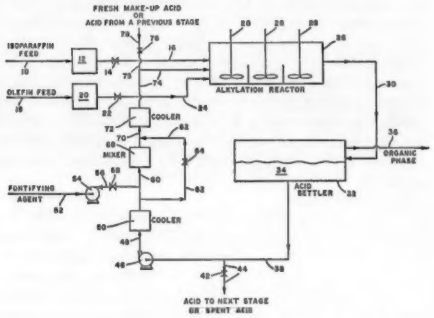
Bela I. Karsay, DeWitt; Robert L. Sturtevant, Baldwinsville, and Alan B. Gancy, Syracuse, all of N.Y., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 863,655, Dec. 23, 1977, abandoned. This application Jun. 11, 1979, Ser. No. 47,448

The portion of the term of this patent subsequent to Apr. 10, 1996, has been disclaimed.

Int. Cl.³ C07C *2/58*

U.S. Cl. 585—730 **4 Claims**



1. In a continuous cyclic process for producing alkylate wherein an alkylatable hydrocarbon is contacted with an alkylating agent in an alkylation system under alkylation conditions in the presence of a circulating concentrated sulfuric acid catalyst containing above about 1 weight % and below about 4 weight % of water, the reaction mixture so produced is separated into alkylate and alkylation acid catalyst, a portion of the alkylation acid catalyst is cooled and recycled to the alkylation system, and the water content of the circulatig alkylation acid catalyst is reduced by addition thereto of a sulfur trioxide fortifying agent, the improvement which comprises continuously maintaining the water content in the circulating alkylation acid catalyst in the range of above about 1 weight % and below about 4 weight % by periodically introducing the sulfur trioxide fortifying agent into the cooled portion of said circulating alkylation acid catalyst during less than about 15% of the cycles of the circulating alkylation acid catalyst through the alkylation system.

4,260,847

PROCESS AND APPARATUS FOR THE CONTINUOUS REMOVAL OF RESIDUAL HYDROCARBONS FROM POLYOLEFINS

Karl Kaiser, Brühl; Robert Willms, Hürth-Knapsack, and Bernhard Kuxdorf, Brühl, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 28, 1980, Ser. No. 116,320

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1979, 2903586

Int. Cl.³ B01D *3/22*

U.S. Cl. 585—833 **5 Claims**

1. In a process wherein polyolefins which are obtained by subjecting olefins to polymerization in contact with standard

catalyst mixtures comprised of heavy metal compounds and organometal compounds, and contain 10 to 50 weight% of residual saturated hydrocarbons with at least 5 carbon atoms in their molecule or mixtures of such residual hydrocarbons are freed from those residual hydrocarbons by means of water and steam, the improvement which comprises:

A. introducing the hydrocarbon-containing polyolefin into an aqueous emulsifier-containing solution having a surface tension at 20° C., with respect to air, of about 50 to 60 dynes/cm; stirring the resulting mixture and converting it to a homogeneous dispersion, the aqueous dispersion containing about 10 to 40 weight% of the polyolefin;

B. Providing a sieve plate column wherein a vertically elongated tubular shell is provided with a plurality of substantially horizontally disposed perforated plates, said plates being vertically spaced within and attached to the inner surface of the shell; a reasonably small gap uniform in width over the periphery being left between each of said plates and said shell; each of said plates being penetrated by at least one eccentrically arranged conduit comprising a draining shaft in the upper portion thereof and a feed shaft in the lower portion below the penetrated plate, and a surface portion of each perforated plate underneath each conduit being impermeable, said impermeable surface portion being one to two times the cross-sectional area of the conduit, and in which sieve plate column:

(a) the ratio of plate spacing to height of draining shaft is 4 to 5;

(b) the ratio of height of draining shaft to column diameter is 1.1 to 0.1;

(c) the ratio of height of draining shaft to diameter of perforations in perforated plates is 70 to 220;

(d) the ratio of height of draining shaft to distance between lower end of feed shaft and next plate below it is 2.5 to 9;

(e) the column comprises 5 to 30 plates; and

(f) the free cross-sectional area is 3 to 10% the cross-sectional area of the column; and introducing the said aqueous dispersion into the upper portion of the said sieve plate column; and

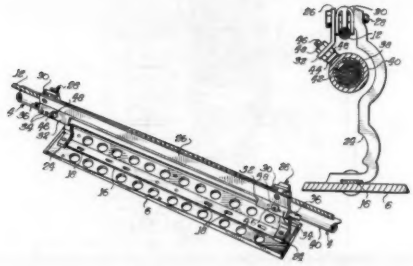
C. removing, from the base portion of the column, an aqueous polyolefin dispersion free from hydrocarbons and separating the polyolefin from the water; and distilling off overhead a hydrocarbon/water-azeotrope or azeotropic mixture, condensing the azeotrope or azeotropic mixture in a condenser and separating it into its components in a separator downstream of the condenser.

4,260,848

READY ACCESS CLOSURE FOR COMMUNICATION CABLES

Mauricio Amaya, Roselle, Ill., assignor to Reliable Electric Company, Franklin Park, Ill.

Filed Mar. 3, 1980, Ser. No. 126,973
Int. Cl.[3] H02G 7/06
U.S. Cl. 174—41 5 Claims



1. A ready access closure and communications cable, wherein the cable has an outer dielectric sheath and an electrically conductive shield surrounded thereby and which shield is interrupted between the hereinafter recited brackets, said closure further having a strap running lengthwise of the closure, spaced apart brackets attached to the respective opposite ends of the strap and being clear of the cable, a messenger cable running lengthwise of the closure in spaced relation to said strap, a messenger cable clamp secured to each bracket for gripping the messenger cable, a grounding clamp adjacent to each bracket for removably gripping said shield, a unitary electrically conductive tie brace extending between said brackets and joined to each such that a frame structure is provided that includes with said tie brace, said brackets and said strap, and fastener means for removably connecting each said grounding clamp directly to said tie brace to form a continuous electrical connection over the interrupted portion of the shield while keeping the cable free of clamping engagement with said frame structure but retaining the cable-supporting function of the messenger cable.

4,260,849

LOW COST GROUNDING HANGER ASSEMBLY

Robert E. Kirby, Garner, N.C., assignor to Telex Computer Products, Inc., Raleigh, N.C.

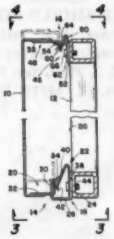
Filed May 8, 1979, Ser. No. 37,156
Int. Cl.[3] H05K 7/18; H02B 1/16
U.S. Cl. 174—51 7 Claims

1. An apparatus which removably supports a cover to a vertical surface of a base structure, comprising:

a hanger having a horizontal portion and a vertical portion, one end of the horizontal portion being secured to the base vertical surface and said vertical portion integrally extending from the other end, the vertical portion being spaced from and parallel the base structure vertical surface;

a spring member of inverted V-shape configuration having a vertical leg affixed to the base structure vertical surface parallel and opposite said hanger vertical portion, and having an angular leg extending to normally resiliently engage said hanger vertical portion; and

a bracket having a horizontal portion, the inner end of which is affixed to the cover, and having an integral vertical portion at the outer end, the horizontal portion having an opening therein adjacent the vertical portion, the opening receiving said hanger vertical portion,



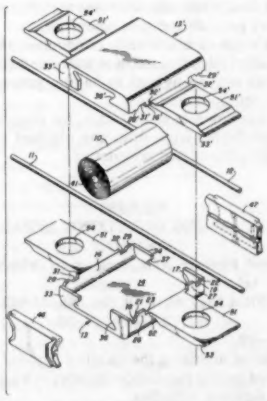
whereby said bracket is secured to said hanger by inserting said hanger vertical portion through said opening, said bracket and hanger vertical portions being thereby parallel and contiguous each other, said spring angular leg being inwardly displaced by said bracket vertical portion to provide resilient engagement of said bracket and said spring.

4,260,850

BOX FOR ENCASING AN ELECTRICAL DEVICE

Donald R. Brown, Downers Grove; Otto T. Masopust, Jr., Cicero, and John R. Meal, Naperville, all of Ill., assignors to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 16,045, Feb. 28, 1979, Pat. No. 4,221,034.
This application Feb. 22, 1980, Ser. No. 123,603
Int. Cl.[3] H05K 5/02
U.S. Cl. 174—52 R 4 Claims



1. A box for use in encasing an electrical device, which comprises:

a pair of box halves, each having an open side and adapted to be mated with each other to form an internal cavity for receiving the electrical device; each of said box halves having a dovetailed slot formed in an end wall and extending from one open edge so as to be aligned with the dovetailed slot formed in the other box half when the box halves are mated;

each of said box halves having a first partial circular shaped

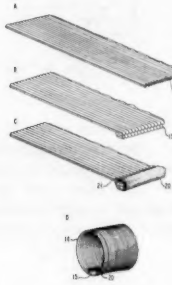
slot formed in one side wall, and a second circular slot formed in the opposed side wall, said circular slots being positioned to align with each other when the box halves are mated to form a circular opening for entry of a wire running to an electrical device positioned in said internal cavity.

4,260,851

BUILT-IN CABLE SHIELD BONDING SYSTEM

Arnold R. Smith, Chester, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 2, 1979, Ser. No. 53,798
Int. Cl.³ H01B *7/18*
U.S. Cl. 174—107 **7 Claims**



1. An electrical cable comprising:
a plurality of insulated conductors;
means for binding said conductors in close proximity to one another to form a cable core;
insulative means surrounding said cable core;
conductive shield means surrounding said insulative means;
insulative sheath means surrounding said conductive shield means; and
means, integral with said conductive shield means, for providing shield continuity when said insulative sheath means and said conductive shield means are entered, said shield continuity providing means comprising
a folded edge of electrically conductive sheet material, said folded edge formed of at least one fold of said sheet material and configured to have a generally flattened S-like configuration; and
means, encasing said folded edge, for electrically insulating said folded edge from any exposed conductors in said plurality of said conductors.

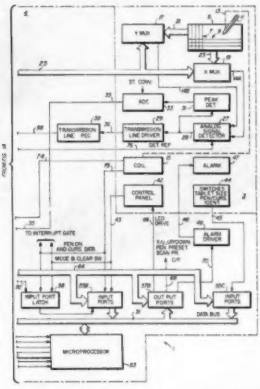
4,260,852

UP/DOWN SCANNING DIGITIZING APPARATUS AND METHOD

George A. Fencl, Phoenix, Ariz., assignor to Talos Systems, Inc., Scottsdale, Ariz.

Filed May 24, 1979, Ser. No. 42,093
Int. Cl.³ G08C *21/00*
U.S. Cl. 178—19 **24 Claims**

1. A method of digitizing the location of a coil with respect to a plurality of spaced parallel conductors in a support surface element of a digitizer including
i. a scanning circuit for sequentially sensing ones of the conductors having signals induced therein by the coil,
ii. an analog circuit for producing an output signal which indicates when the scanning circuit senses any of the conductors having an induced signal which is out of phase with the induced signal in the previously sensed conductors,
said method comprising the steps of:
a. performing a first scanning of conductors from a reference point toward the coil location until a first conductor is sensed having thereon an induced signal which is out of phase with the induced signal on the previously sensed conductor;
b. performing a second scanning of conductors toward the first conductor from a second conductor located a first distance from the first conductor on one side of the coil approximately unti the time that the output signal of the analog circuit indicates a reversal in phase between sequentially sensed ones of said conductors and storing a first number representing the time required for said second scanning;



c. performing a third scanning of conductors toward the first conductor from a third conductor located a second distance from the first conductor on the opposite side of the coil approximately until the time that the output signal of the analog circuit indicates a reversal in phase between sequentially sensed ones of said conductors and storing a second number representing the time required for said third scanning; and
d. computing the average value of said first and second numbers, whereby said average value represents the location of the coil with respect to the plurality of conductors.

4,260,853

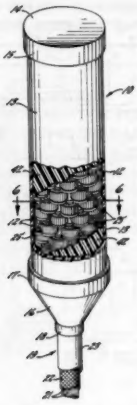
METHOD AND APPARATUS FOR MOUNTING AND ALIGNING ELECTRICAL COMPONENTS

Joseph T. Charles, 46 Brinker, Barrington Hills, Ill.

Filed Aug. 30, 1979, Ser. No. 71,019
Int. Cl.³ H03H *3/00;* **H01F** *17/08*
U.S. Cl. 178—46 **20 Claims**

1. A mounting and alignment device for annular electrical components for encasement in a cylindrical housing comprising a generally circular tray with a centrally located aperture therein surrounded by a plurality of upstanding mounting pins disposed concentrically around said aperture, each of said pins being dimensioned to locate and receive an annular electrical

component thereon and means on said tray for registering a second such tray having upstanding mounting pins thereon



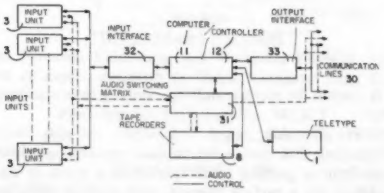
with the pins on the two trays disposed in circumferentially staggered relation to one another.

4,260,854

RAPID SIMULTANEOUS MULTIPLE ACCESS INFORMATION STORAGE AND RETRIEVAL SYSTEM

Gerald M. Kolodny, and Paul R. Hughes, both of Sudbury, Mass., assignors to Sudbury Systems Incorporated, Sudbury, Mass.

Filed May 20, 1975, Ser. No. 579,063
Int. Cl.³ H04M *11/10*
U.S. Cl. 179—6.09 **12 Claims**



1. A simultaneous multiple access information storage and retrieval system comprising in combination:

magnetic recording and playback means including tape transport means and means for storing audio information;

at least one input device for providing audio information to said means for storing audio information;

at least one output device for selectively reproducing said stored audio information in said magnetic recording and playback means;

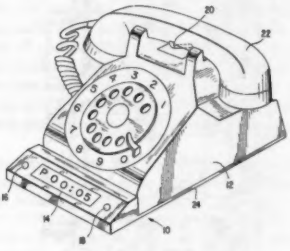
a controller including means for multiplexing the interchange of audio signals between each said input device and said recording and playback means, wherein said controller further includes means for simultaneously controlling the motions of said tape transport means and record and erase functions of said magnetic recording and playback means.

4,260,855

TELEPHONE TIMER DEVICE

Morton K. Rubinstein, 14954 Corona Del Mar, Pacific Palisades, Calif. 90272

Filed Jun. 8, 1979, Ser. No. 46,656
Int. Cl.³ H04M *1/21*
U.S. Cl. 179—7.1 R **10 Claims**



1. A time display device for use with a telephone subscriber handset comprising:

(a) time display means;

(b) a display control circuit connected to said time display means for controlling the time display mode of said time display means and for advancing time display signals to said time display means;

(c) a call time duration circuit operatively responsive to the operation of said telephone subscriber handset for producing time display signals representative of the call time duration of a telephone call and connected to said display control circuit for applying to said time display means time display signals representative of the call time duration of a telephone call for the display of the call time duration on said time display means;

(d) interval time duration circuit having start-stop switching means and operatively responsive to the actuation of said start-stop switching means thereof for producing time display signals representative of the start-stop interval duration and connected to said display control circuit for applying to said time display means time display signals representative of the start-stop interval duration on said time display means; and

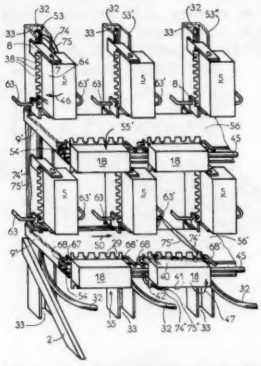
(e) display mode selector switching means connected to said display control circuit for activating said display control circuit to select the time display mode for said time display means, said display mode selector switching means produces pulses and said display control circuit includes pulse counting means responsive to said pulses produced by said display mode selector switching means for selecting the time display mode of said time display means, said display control circuit including decoding means operatively responsive to said pulse counting means and connected to said call time duration circuit and said interval time duration circuit for enabling the respective advancement of said time display signals representative of said call time duration of a telephone call and said time display signals representative of the start-stop interval duration of said time display means, said display mode selector switching means being connected to said call time duration circuit for producing pulses for selecting the call time duration mode of said time display means in response to said telephone subscriber handset initiating the operation of said call time duration circuit.

4,260,856

DISTRIBUTOR

Yves Saligny, Cluses, France, assignor to Etablissements Carpano & Pons, France

Filed Jun. 20, 1979, Ser. No. 50,505
Claims priority, application France, Jul. 13, 1978, 78 21629
Int. Cl.[3] H04Q *1/14*
U.S. Cl. 179—98 **9 Claims**



1. A telephone exchange distributor accessible from one side only, namely the front face, which comprises lines of connecting blocks for incoming subscribers' lines, disposed vertically, and lines of distribution strips, disposed horizontally, or vice versa, guideways provided vertically and horizontally, to permit the wiring of the incoming lines to said connecting blocks, the wiring of the jumpers between said blocks and said distribution strips, and wiring of outgoing lines issuing from said strips and leading to automatic switching device of the telephone exchange, wherein intervals are provided between at least some of said connecting blocks or some of said strips of all the vertical lines, said horizontal lines of strips or connecting blocks being disposed substantially in front of and level with said intervals on the vertical front face of said distributor, the vertical lines of connecting blocks, or strips, being disposed behind said front face and parallel thereto.

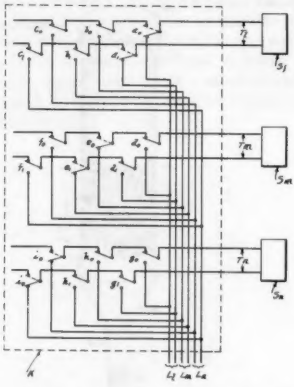
4,260,857

OFFICE LINE CONNECTION CIRCUIT DURING SERVICE INTERRUPTIONS IN KEY TELEPHONE APPARATUS

Tsuyoshi Shinoi, Yokohamashi, and Setsuo Oshima, Kawasaki, both of Japan, assignors to Nippon Tsushin Kogyo KK, Kawasaki, Japan and TIE/Communications, Inc., Shelton, Conn.

Filed Jan. 30, 1979, Ser. No. 7,898
Claims priority, application Japan, May 2, 1978, 53-59262[U]
Int. Cl.[3] H04Q *5/18*; H04M *1/00*
U.S. Cl. 179—99 R **4 Claims**

1. In a key telephone system including a key service unit having a switching matrix comprising a plurality of relay means, and a plurality of key telephone station sets which may be selectively connected to one or more lines, the improvement comprising: said plurality of relay means comprising a plurality of groups of relay means, each group being associated with a predetermined key telephone station set, each relay means in each of said groups being controlled by the associated key telephone station set, when the local power supply is functioning, to connect or disconnect the associated key telephone station set to or from the line associated with the relay means and having one of said relay means in each group operative, upon failure of the local power supply, to connect the associated key telephone station set to a predetermined line.

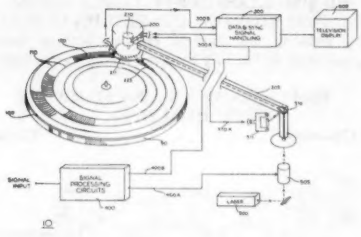


4,260,858

VIDEODISC PLAYER WITH DRIVE MEANS ENGAGING VIDEODISC GUIDE GROOVE

Leo Beiser, 151-77 27th Ave., Flushing, N.Y. 11354

Filed Jun. 26, 1978, Ser. No. 918,809
Int. Cl.[3] H04N *5/76*; G11B *17/00*
U.S. Cl. 369—103 **28 Claims**



1. A system for storing and reproducing information, comprising:

a passive turntable;

a recording disk mountable on said turntable and having a mechanical guiding track formed in a spiral or circular pattern on a surface thereof, said guiding track having serrations therein;

a multiplicity of relatively closely spaced elongated optical records, containing said information, being formed in said disk in the regions between said guiding track and generally transverse said guiding track;

a pivot arm;

a signal recovery device mounted on said pivot arm, said signal recovery device including mechanical tracking means for guiding said device along said guiding track, optical scanning means for scanning the optical records, said optical scanning means being operative to scan successively said optical records as said device moves with respect to said guiding track, mechanical driving means, synchronized with said optical scanning means, and including a rotatable member which engages the serrations of said guiding track to cause motion of said disk with respect to said signal recovery device so that said signal

recovery device is moved relatively slowly toward the center of said disk as said disk is rotated by said mechanical driving means; and

means responsive to said optical scanning means for recovering the information contained in said scanned optical records.

4,260,859

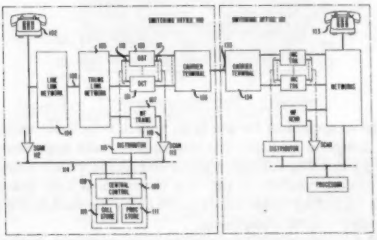
METHOD AND APPARATUS FOR DETECTING TRANSMISSION SYSTEM FAILURES IN A COMMUNICATIONS NETWORK

James E. Aaroen, Somonauk, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 23, 1980, Ser. No. 114,642

Int. Cl.³ H04B *3/46*

U.S. Cl. 179—175.3 R **11 Claims**



1. In a telephone switching system a machine method for ascertaining a carrier transmission system failure comprising the steps of

detecting a service call failure of a trunk,

ascertaining if the trunk is in a group served by said transmission system,

testing at least one other trunk in the same group,

removing from service all trunks in the group as a result of a failure of said test,

retesting individual ones of the trunks removed from service, and

restoring all trunks in the group to service upon the successful completion of said retest.

4,260,860

DIP ROTARY SWITCH

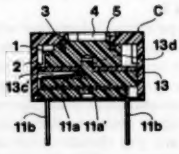
Koichi Niihama, Yokohama, and Yoshitada Ishizuka, Tokyo, both of Japan, assignors to Delphi Company Ltd., Tokyo, Japan

Filed Sep. 15, 1978, Ser. No. 942,673

Claims priority, application Japan, Sep. 29, 1977, 52-131153[U]

Int. Cl.³ H01H *19/00*

U.S. Cl. 200—6 R **2 Claims**



1. In a DIP rotary switch having a rotatable member including a rotor and attached disc rotatably mounted on a base of a housing, the improvement comprising:

said base of said housing comprising first and second flat oblong shape plates, each plate having top and bottom surfaces with the bottom surface of the first plate immediately adjacent the top surface of said second plate;

first and second pluralities of flat ribbon shaped plate terminals, each terminal having a central portion and two end portions, the central portion of each of said first and second plurality of terminals sandwiched between said top surface of said second plate and said bottom surface of said first plate, said top surface of said second plate and said bottom surface of said first plate being parallel to each other;

the first of said two end portions of each terminal of said first plurality of terminals bent orthogonal to said top and bottom surfaces of said first and second base plates, and the first of said two end portions of each terminal of said second plurality of terminals bent orthogonal to said top and bottom surfaces of said first and second base plates, wherein said first end portions of said terminals of said first and second plurality of terminals form two parallel rows;

said top surface of said first plate having parallel guide slots arranged from edge to edge across said first base plate and having hollows at the edges of said first base plate, wherein the second of said end portions of the terminals of said first and second plurality of terminals are bent to fill said hollows and said guide slots;

each of said second end portions of each of said terminals having a contact segment thereon;

a surface of said disc having conductive patterns thereon, wherein said disc and said first base plate are arranged such that said contact segments make electrical contact with said conductive patterns on said surface of said disc, whereby the electrical interconnection between said terminals of said first and second plurality of terminals may be controlled by rotating said rotor.

4,260,861

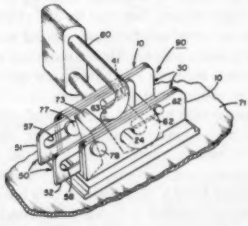
HANDLE LOCKING MEANS FOR CIRCUIT BREAKER

Bernard DiMarco, Bellefontaine, Ohio, assignor to Gould Inc., Rolling Meadows, Ill.

Filed Jul. 30, 1979, Ser. No. 62,441

Int. Cl.³ H01H *9/28*

U.S. Cl. 200—42 T **12 Claims**



1. A handle locking attachment for use with a switch including a housing and a contact operating handle extending externally of the housing through a front opening thereof and reciprocable parallel to the sides of the opening between the ends thereof, to open and closed contact positions; said attachment including frame means and a blocking member mounted on said frame means for movement between inactive and active positions; said frame means and said blocking member each having lock aperture means which are aligned when said blocking member is in said active position to receive and position a lock bail to prevent movement of the operating handle between its open and closed contact positions when said attachment is operatively secured to the housing; said frame means including first and second frame members mounted to each other and relatively movable to hold and release positions for respectively mounting and dismounting said attachment on the switch; said first and second frame members including

respective first and second formations which extend rearward through the opening at opposite ends thereof; said first and second formations along the rear thereof including respective first and second projections facing away from each other to secure the attachment to a switch when the frame members are in said hold position; securing means engageable with said frame means to maintain said frame members in said hold position; and pivot means defining a pivot axis about which said frame members move between said hold and release positions and providing a sliding connection along which said blocking member moves between said active and inactive positions.

4,260,862

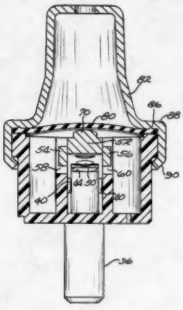
CONDITION RESPONSIVE APPARATUS HAVING AN IMPROVED MOTION TRANSFER MEMBER

John W. Orcutt, Garland, Tex., assignor to Texas Instruments Incorporated, Attleboro, Mass.

Continuation of Ser. No. 837,969, Sep. 29, 1977, abandoned. This application Feb. 21, 1979, Ser. No. 13,101

Int. Cl.³ H01H *35/34*

U.S. Cl. 200—81 R **10 Claims**



7. A condition responsive device comprising a base formed of electrically insulative material defining a switch chamber therein, a switch means disposed in the chamber including a movable contact arm and first and second terminal members, the movable contact arm cantilever mounted on a distal end of the first terminal member and having a length extending from the cantilever mount and terminating in a free end portion adapted to move into and out of electrical engagement with a distal end of the second terminal member, means defining an opening in the base communicating with the switch chamber, condition responsive means mounted at the opening in the base adapted to move from a first position to a second position and back upon being exposed to preselected conditions to respectively close and open an electrical circuit from the first terminal through the movable contact arm to the second terminal, the distal end of the first terminal being located on a laterally extending portion which is formed with a surface portion which curves downwardly toward the second terminal and away from the condition responsive means, the curved surface portion being disposed beneath the movable contact arm, and a motion transfer member slidably disposed intermediate the movable contact arm and the condition responsive means, the member having a curved bottom surface extending over a portion of the length of the movable contact arm so that movement of the condition responsive means from the first position to the second position causes the motion transfer member to bend the movable contact arm to conform to the bottom surface configuration of the motion transfer member and the curved surface portion of the distal end of the first terminal to thereby distribute impact forces from the condition responsive means along the length of the movable contact arm.

4,260,863

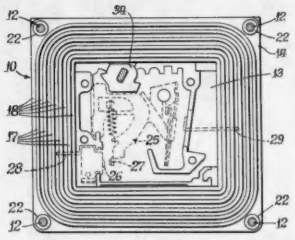
VENTED PLASTIC ENCLOSURE FOR ARCING DEVICES

Arthur I. Appleton, 22 Indian Creek Dr., Indian Creek Village, Fla. 33154

Continuation of Ser. No. 804,501, Jun. 8, 1977, abandoned, which is a continuation-in-part of Ser. No. 613,021, Sep. 12, 1975, abandoned. This application Nov. 6, 1978, Ser. No. 958,012

Int. Cl.³ H01H *33/08*

U.S. Cl. 200—144 R **8 Claims**



1. In an apparatus for use in an area in which the ambient air may comprise an explosive atmosphere, said apparatus comprising a housing defining a space and arcing-prone means such as a circuit breaker or the like mounted in said space, said means including metal components carrying electrical current, the improvement comprising:

said housing being formed of plastic and including a fixed body part and a cover part affixed to said body part, each of said parts having a portion in immediate juxtaposition to the other part, said portions defining a circuitous passageway between said space and the outside of the housing, said passageway extending about substantially all the periphery of said parts at said portions and sufficiently wide between said portions to provide a total passageway area to avoid substantial pressure buildup within the housing as a consequence of said atmosphere being ignited within said space, said passageway having an axial length between said space and the outside of the housing of at least 2.54 cm and being sufficiently narrow between said portions to cool any flame propagating from said space toward the exterior of the housing through said passageway, said metal components being directly mounted to said housing.

4,260,864

VACUUM-TYPE CIRCUIT INTERRUPTER WITH AN IMPROVED CONTACT WITH AXIAL MAGNETIC FIELD COIL

Paul O. Wayland, Montour Falls, N.Y.; Joseph G. Gorman, Murrysville Borough, and Roy E. Voshall, Loyalhanna Township, Westmoreland County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 30, 1978, Ser. No. 965,012

Int. Cl.³ H01H *33/66*

U.S. Cl. 200—144 B **9 Claims**

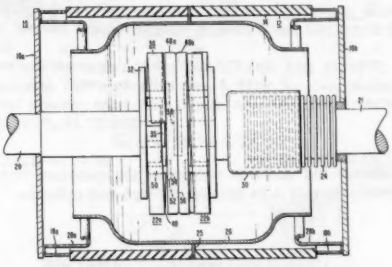
1. A vacuum-type circuit interrupter which includes a housing which is evacuated and sealed, with a pair of relatively movable contacts sealed through and supported within the housing, at least one of the contacts being movable between a closed position in conductive engagement with the other contact, and an open position spaced apart from the other contact with an arc gap therebetween across which an arc forms during circuit interruption, the improvements wherein at least one of the contacts includes axial magnetic field generating means for maintaining a diffuse arc, which contact comprises:

(a) a high conductivity arc contact member;

(b) a relatively low conductivity supporting base plate which is spaced from the arc contact member with a

plurality of low conductivity support posts extending from the support base plate to the arc contact member, the posts being disposed intermediate the aligned centers of the base plate and the arc contact member and their perimeters, the supporting base plate having a central aperture through which a high conductivity contact support rod extends;

(c) axial magnetic field generating means disposed between the supporting base plate and the arc contact member, the axial field generating means comprises a generally planar



high conductivity member having a central web portion and a plurality of partial turn coil portions extending from the central web portions, the partial turn coil portions are directed in a common circumferential direction, with the extending ends of the coil portions extending toward and electrically connected to peripheral portions of the contact member, the partial turn coil portions together form an axial magnetic field coil which produce a substantially uniform axial magnetic field over the arc contact area.

4,260,865

CIRCUIT BREAKER

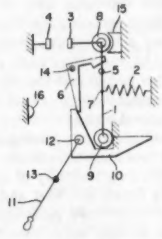
Toshiaki Horiuchi, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 2, 1979, Ser. No. 63,087

Claims priority, application Japan, Aug. 31, 1978, 53-107113

Int. Cl.³ H01H *3/04*

U.S. Cl. 200—320 **3 Claims**



1. A circuit breaker comprising:

a spring mechanism;

a lever which is connected to said spring mechanism at a point between opposite ends of said lever;

a rotary roller which includes a rotary shaft rotatably fitted to one end of said lever;

an arm having one end operatively connected to the rotary shaft of said roller;

a movable contact connected to the other end of said arm;

a stationary contact facing said movable contact;

a stopper for said rotary roller positioned at a side of said rotary roller opposite the side of said contacts;

a fitting mechanism fitted to said lever between said movable contact and the position of connection of said spring mechanism to said lever;

a ratchet mechanism operatively engageable with said fitting mechanism to position the lever at a first position when the other end of said lever is shifted to a predetermined position against the force of said spring mechanism;

a roller connected to the other end of said lever;

a closing hook operatively engageable with said roller, one end of which is rotatably supported and on which a force is applied so as to maintain said fitting mechanism at the other end;

a stopper for cooperating with said closing hook; and

means for turning said closing hook, whereby said contacts are positioned in a closed or opened state by movement of said lever under spring force of said spring mechanism by engagement with or release of said fitting mechanism from said ratchet mechanism.

4,260,866

REMOTE OPERATION DEVICE

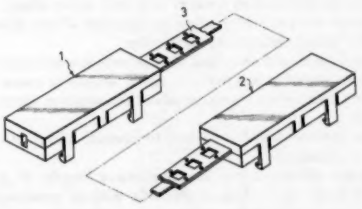
Hitoshi Fujino, Furukawa, and Kotaroh Tsutsui, Yokohama, both of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Apr. 27, 1979, Ser. No. 33,574

Claims priority, application Japan, Apr. 29, 1978, 53-57133[U]

Int. Cl.³ H01H *3/00*

U.S. Cl. 200—331 **8 Claims**



1. In a remote operation device for interconnecting spaced electric components for operating one of said components by remote actuation of the other, comprising

a resilient interconnection member for interconnecting said spaced electric components, said interconnection member including a sleeve member and a slide member extending slidably therein; and

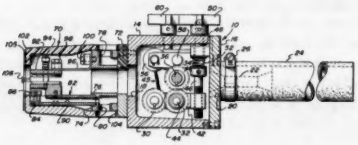
first and second connection members each adapted to be secured detachably to respective ones of said components and including a movable plate secured to the respective end of said slide member and having a portion engaging the operation portion of the respective component the improvement wherein said first and second connection members each include an upper housing and a lower housing fitted together detachably for holding the respective end of said interconnection therebetween, each said upper housing having at least one first fastening member formed integrally thereon for fastening said upper housing detachably to said lower housing, and at least one second fastening member formed integrally on each of said upper housings for fastening the connection members detachably to the respective electric component held against said lower housing.

4,260,867

ELECTRODE DRIVE AND NOZZLE SYSTEM FOR AUTOMATIC AIR-CARBON ARC CUTTING AND GOUGING TORCH

William J. Coughlin; Stephen A. Hoffman, and Jerry R. Hummel, all of Lancaster, Ohio, assignors to Arcair Company, Lancaster, Ohio

Filed Mar. 30, 1979, Ser. No. 25,437
Int. Cl.[3] B23K *9/12;* **B65H** *17/22*
U.S. Cl. 219—70 **10 Claims**



1. In an automatic air-carbon arc cutting and gouging torch of the type adapted for positioning at a fixed position relative to a workpiece and having a nozzle for supporting a consumable electrode juxtaposed to a workpiece said nozzle having means to direct at least one stream of air along said electrode said torch including means to continuously feed successive jointed lengths of electrode through said nozzle to said workpiece as said electrode is consumed the improvement comprising:

a housing having an inlet aperture and an outlet aperture aligned therewith to permit electrode movement through said housing;

an adjustable first or drive wheel pivotably mounted in said housing said drive wheel adapted for frictional contact with said electrode to move said electrode through said housing;

an adjustable second or idler wheel pivotably mounted in juxtaposition to said drive wheel to exert a clamping force on said electrode in concert with said drive wheel;

means to independently adjust the position of said drive and idler wheels relative to each other;

means to bias said drive and idler wheels toward each other while allowing said drive and idler wheels to move away from each other to accomodate non-uniform electrodes; and

means to move said drive wheel to advance said electrode as it is consumed;

whereby said torch can feed successive lengths of jointed electrodes regardless of joint fit without crushing and prevent breaking electrodes of non-uniform lengths due to an excessive bending moment imposed by non-pivoting drive and idler wheels.

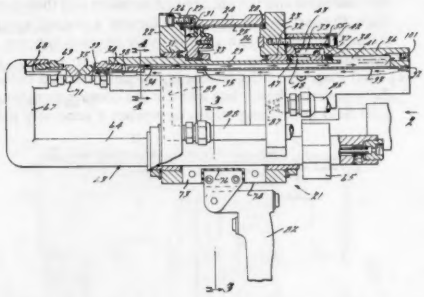
4,260,868

CURRENT CARRYING RECIPROCABLE FLUID MOTOR

Harry E. Day, Bloomfield Hills, Mich., assignor to Day Industrial Research Corporation, Ferndale, Mich.

Filed Nov. 29, 1978, Ser. No. 964,468
Int. Cl.[3] B23K *11/10;* **H01R** *41/00*
U.S. Cl. 219—86.31 **14 Claims**

1. In combination, a cylinder, a piston rod slidable in said cylinder, a stationary contactor having a first portion and a plurality of circumferentially arranged flexible fingers extending axially from said first portion, said fingers having inwardly facing surfaces, means urging said surfaces into contact with the external surface of said piston rod, portions of said fingers spaced outwardly from said piston rod thus forming a first grease chamber, a cooling chamber disposed adjacent to said first grease chamber through which a cooling fluid passes for cooling said piston rod and said inwardly facing surfaces of said fingers in contact therewith, sealing means interposed between said first grease chamber and said cooling chamber and slidably engageable with said piston rod to separate said first grease chamber and said cooling chamber, and a direct, positive and immovable connection between an electrical cable



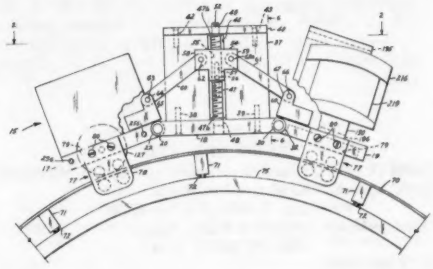
conductor and said first portion of the stationary contactor whereby current does not pass through said cylinder.

4,260,869

TRAVELING WELDING CARRIAGE

Clyde M. Slavens, and Edward A. Clavin, both of Houston, Tex., assignors to Midcon Pipeline Equipment Co., Houston, Tex.

Filed May 30, 1978, Ser. No. 910,354
Int. Cl.[3] B23K *9/12, 37/02*
U.S. Cl. 219—124.31 **9 Claims**



1. Welding carriage apparatus adapted for travel along a track, comprising a three part carriage body assembly having a first body part having a hinged connection to one end of a second body part and having a third body part having a hinged connection to the other end of said second body part, said first and third body parts each having wheel means for engaging said track and said second body part being supported between said first and third body parts and having no engagement with said track, a welding tool mounted on said third body part and adapted to form welds longitudinally of said track, means for rigidly yet adjustably fixing said first and second body parts and said second and third body parts against pivotal movements therebetween at said respective hinged connections whereby said third body part is fixed against movement with respect to the position of said first body part, said means for rigidly yet adjustably fixing said first and second body parts and said second and third body parts against pivotal movements also permitting adjustments of said wheel means of said first and third body parts for travel along tracks of different curvatures, said engagements of said wheel means of said first and second body parts with said track permitting relative movements between said first and second body parts and said track, said wheel means of said first body part including at least one pair of wheels spaced longitudinally of one side of said track, said first body part supporting drive wheel means movable forceably against the other side of said track between said longitudinally spaced wheels whereby when said drive wheel

means is forceably engaged with said track said first body part is fixed against pivotal movement with respect to said track whereby said third body part is also fixed against movements with respect to said track so that movement of said welding tool mounted on said third body part tending to diminish weld quality is prevented.

4,260,870

AUTOMATIC WELDING APPARATUS FOR UPWARD WELDING OF CURVED JOINT

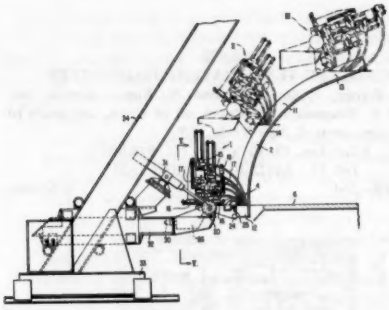
Teruyoshi Sekino, Fujisawa, and Takaaki Ogasawara, Kamakura, both of Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Continuation-in-part of Ser. No. 825,068, Aug. 16, 1977, abandoned. This application Apr. 4, 1979, Ser. No. 26,816

Claims priority, application Japan, Aug. 16, 1976, 51-98109; Oct. 21, 1976, 51-126953

Int. Cl.[3] **B23K** *9/12*

U.S. Cl. 219—124.33 **8 Claims**



1. An automatic welding apparatus for performing an upward welding of a curved joint of an object along a welding line of said object including an arm carried by a column for free vertical and horizontal movements, which comprises:

a plurality of welding nozzles each provided with welding wires and mounted on said arm;

means connected to said arm for adjusting the distance between said welding nozzles and for movement of said welding nozzles in directions in parallel with and normal to a line tangent to said welding line, independently of each other;

means connected to said arm for detecting inclination of said line tangent to said welding line at a welding point; and

a nozzle orientating mechanism connected to said arm and adapted to rotate said nozzles in accordance with said inclination detected by said detecting means, so as to orient said welding wire fed from said welding nozzles in parallel with said line tangent to said welding line.

4,260,871

HANDLE FOR HOLDING, HEATING AND MANIPULATING SUCCESSIVELY APPLIED HAIR ROLLERS

Petrus J. J. Nagelkerke, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 9, 1978, Ser. No. 884,745

Claims priority, application Netherlands, Apr. 12, 1977, 7703945

Int. Cl.[3] **H05B** *1/00;* **A45D** *4/16*

U.S. Cl. 219—222 **5 Claims**

1. A hair roller holder comprising an elongated hollow handle defining a chamber for accommodating a plurality of hair rollers in succession, means associated with said chamber for heating said rollers while successively accommodated therein, said chamber having an inlet opening at one end for insertion thereinto of said rollers in unheated condition and an outlet opening at the other end for discharge therefrom of said rollers in heated condition, means associated with the handle adjacent said outlet opening in a manner for releasably receiving and supporting a heated roller externally of the chamber in a position in which hair can be wrapped onto the roller and the

roller can be manipulated by the handle, and means provided in said chamber for guiding movement of the successive rollers therethrough from the heating position in said chamber to the wrapping position on said supporting means.

4,260,872

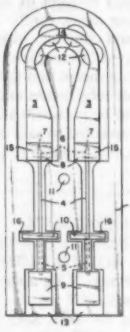
CERAMIC IGNITOR

Franz J. Brodmann, Philadelphia, and Ronald Staut, Bala Cynwyd, both of Pa., assignors to General Refractories Company, Bala Cynwyd, Pa.

Filed Mar. 13, 1978, Ser. No. 886,064

Int. Cl.[3] **F23Q** *7/10*

U.S. Cl. 219—270 **11 Claims**



1. A fast response constant voltage ceramic ignitor comprising:

a ceramic holder block; an electrically conductive body mounted in said block and consisting essentially of the composition $La_{1-x}Sr_aMg_bNb_cCrO_3$ were $x=a+b+c$ and a=0 to 0.2, b=0 to 0.5, and c=0 to 0.5; and

means attached to said body and mounted in said block for transmitting an electric current therethrough, said holder block having at least one opening therein for exposing a portion of said body to the medium to be ignited.

4,260,873

ELECTRICALLY HEATED HAND HELD VAPORIZER FOR VAPOR POLISHING PLASTIC SURFACES

Milo R. Simmonds, Williamsville, N.Y., assignor to A-T-O Inc., Willoughby, Ohio

Filed Oct. 18, 1978, Ser. No. 952,493

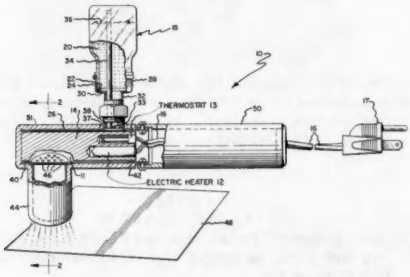
Int. Cl.[3] **H05B** *1/00;* **B05B** *1/24;* **D06F** *75/06;* **B01J** *7/00*

U.S. Cl. 219—273 **9 Claims**

1. A hand held apparatus for the vapor polishing of plastic surfaces by movement of the apparatus over a plastic surface to be polished, said apparatus comprising:

(a) a body portion defining a chamber:

(b) a container for plastic solvent;
(c) means for mounting said container on one side of said body portion for flow of solvent from said container into said chamber when said apparatus is positioned with said container disposed above said chamber, with flow of solvent into said chamber being interrupted when said apparatus is inverted to dispose said container below said chamber;
(d) heating means disposed within said chamber, said heating means being capable of generating heat sufficient to vaporize solvent flowing into said chamber from said container;



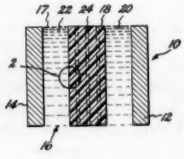
(e) guide tube means projecting from the side of said body portion generally opposite said one side thereof, said guide tube means being in fluid communication with said chamber in spaced apart relation to said container mounting means and opening downwardly when said apparatus is positioned with said container disposed above said chamber whereby solvent flowing into said chamber is vaporized by said heating means and the resulting vapor passes through said guide tube means and is directed thereby to a plastic surface to be polished; and
(f) handle means connected to said body portion for movement of said apparatus relative to the plastic surface to be polished.

4,260,874

MICROPOROUS INSULATING BARRIER SYSTEM FOR ELECTRODE BOILER OUTPUT CONTROL

Fritz G. Will, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 23, 1979, Ser. No. 68,918
Int. Cl.[3] **H05B** *3/60;* **F22B** *1/30*
U.S. Cl. 219—290 **14 Claims**



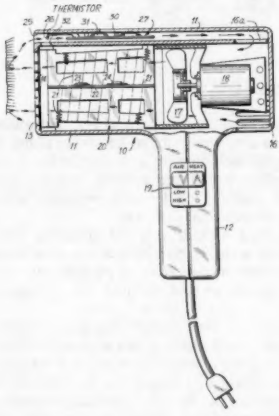
1. An electrode boiler cell containing an electrically-insulating matrix for control of the electrical resistance of the boiler electrolyte comprising:
a first electrode having a major surface area;
a second electrode having a major surface area, said first and second electrodes being disposed in spaced relationship with said major surface areas in juxtaposition; and
an electrically-insulating matrix having first and second major surface areas substantially parallel to each other, said matrix being disposed between said first and second electrodes such that said first major surface area of said matrix is in juxtaposition with and spaced from said major surface area of said first electrode, and said second major surface area of said matrix is in juxtaposition with and spaced from said major surface area of said second electrode, the spacing between the matrix and the electrode surfaces being at least sufficient to prevent concentration of current on the electrode surfaces, said insulating matrix being comprised of a microporous material having a plurality of gas exit passages extending therein, the micropores of said microporous material being permeable to the electrolyte and interconnecting, each said gas exit passage being substantially parallel to said major surface areas of said matrix and intersecting micropores of said matrix, said matrix having dimensions sufficient to bar being bypassed by electrolyte.

4,260,875

CONTROLLED TEMPERATURE HAIR DRYER

Henry J. Walter, Wilton; Raymond W. Kunz, Monroe, and Richard E. Shoemaker, Westport, all of Conn., assignors to Clairol Incorporated, New York, N.Y.

Filed Jun. 19, 1978, Ser. No. 916,994
Int. Cl.[3] **A45D** *20/10;* **H05B** *1/02*
U.S. Cl. 219—364 **2 Claims**



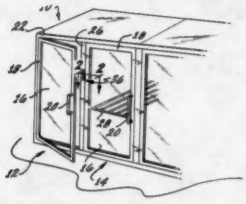
1. A hand held hair dryer comprising
a housing, said housing defining an air inlet, an air outlet and a handle;
a fan disposed in said housing for drawing air through the air inlet into the housing and blowing it out the air outlet and against a person's hair;
a heater for heating the air before it is blown out of the dryer disposed in said housing between the fan and the air outlet;
a feedback air duct, adjacent the air outlet, having a thermistor positioned therein for sensing the temperature of air being reflected off the person's hair and drawn into the feedback air duct at the front of the hair dryer as the hair is dried; and
means operatively connected to the thermistor means for regulating the heat output of the heater by gradually reducing its power output in accordance with the temperature of the reflected air, whereby as the hair is dried the temperature of the air being blown out of the hair dryer is reduced to prevent the hair from being overheated.

4,260,876

DEW POINT DIFFERENTIAL POWER CONTROLLER

Jerome S. Hochheiser, Northridge, Calif., assignor to Anthony's Manufacturing Company, Inc., San Fernando, Calif.

Filed Dec. 11, 1978, Ser. No. 968,023
Int. Cl.[3] H05B 1/00, 1/02
U.S. Cl. 219—497 14 Claims



1. A control circuit for proportionally controlling and applying an ac current from an available ac electric current source to heater means for heating transparent windows adapted for use as openable walls of a refrigerated cabinet having a surface exposed to ambient air outside the cabinet, said control circuit comprising:

(a) dew point sensing impedance means coupled to said available ac current source and thermally coupled to said cabinet surface and exposed to ambient air adjacent said surface, for providing a variable impedance to passage of ac current therethrough proportional to the difference between the temperature of said cabinet surface and the dew point temperature of said ambient air;

(b) sensing circuit means powered by said source of ac current, said sensing circuit means being electrically coupled to said dew point sensing means and responsive thereto for producing an intermittent output pulse signal whose on-off duty cycle is within a predetermined range proportional to the impedance of said dew point sensing means, said output pulse signal being initiated only at those times when said ac current is at or close to zero, when the cabinet surface temperature is at or close to the dew point temperature of said ambient air; and

(c) solid state switch means connected in series circuit with said heater means and said available source of ac current, and responsive to said output pulse signal of said sensing circuit means for completing a series circuit of ac current from said source through said heater means during times proportionally determined by said output pulse signal.

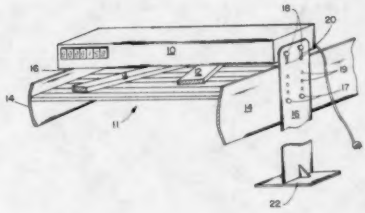
4,260,877

AREA MEASURING APPARATUS FOR ATTACHMENT TO A LINEAR CONVEYOR

Daniel E. Conway, 1514 Edgewood S.E., Grand Rapids, Mich. 49506

Filed Oct. 12, 1978, Ser. No. 950,835
Int. Cl.[3] G01B 5/26
U.S. Cl. 235—92 DN 22 Claims

1. In an area-measuring apparatus for attachment to a linear conveyor, the apparatus being of the type having an array of length and width-measuring wheels and means for summing the rotation of the wheels, the apparatus being particularly adapted for the area measurement of long narrow objects having an irregular height and angular orientation, the improvement comprising means for pivoting each of the wheels about first and second generally orthogonal axis for accommodating objects on the conveyor having irregular heights and angular orientations, respectively.

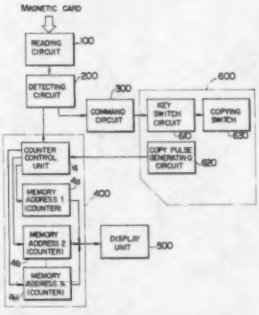


4,260,878

MANAGEMENT SYSTEM FOR COPYING MACHINES

Michio Kawamura, Kariya; Takeshi Kato, Funabashi; Kouji Ohira, Tokyo; Katsusuke Nishimura, Chiba, and Kazuaki Mitsui, Kunitachi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya; Systemkiki Co., Ltd. and Fuji Xerox Co., Ltd., both of Tokyo, all of, Japan

Filed Jan. 18, 1979, Ser. No. 4,478
Claims priority, application Japan, Feb. 3, 1978, 53-11771
Int. Cl.[3] G06M 3/08
U.S. Cl. 235—92 AC 8 Claims



1. In combination with a copying machine for performing copying operations in response to operation commands applied during the receipt of one of a plurality of portable mediums carrying respective user representative information, a management system comprising:

means for recognizing the user representative information of the received portable medium to correspondingly produce an electric user representative signal;

means for producing electric pulse signals in response to the copying operations of said copying machine;

means for electronically storing a plurality of values in respective selectable addresses provided in correspondence with respective user representative information of said portable mediums and selected in accordance with said user representative signal, said storing means increasing the value stored in the selected address in response to each of said pulse signals; and

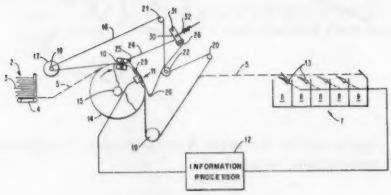
a single means for electrically displaying one of said plurality of values in said storing means selectively when selected by said user representative signal.

4,260,879

UNIT RECORD READER

Matthew J. Galatha, Charlotte; Gene D. Rohrer, Concord, and John J. Squires, Kannapolis, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 5, 1979, Ser. No. 100,589
Int. Cl.³ G06K *7/08, 13/00*
U.S. Cl. 235—449 **7 Claims**



1. Apparatus for reading indicia from a series of documents, including transport means for moving the documents seriatum through a curved path having a concave side, reading means positioned on the concave side of said path for engaging documents moved therepast, and bearing surface means positioned along said path immediately before and after said reading means wherein the improvement comprises:

tracking means, including guide surfaces, positioned on either side of said reading means and defining therebetween a straight line that intersects said path,

an endless belt tensioned about said tracking means, and held by said guide surfaces against said bearing surface means, and

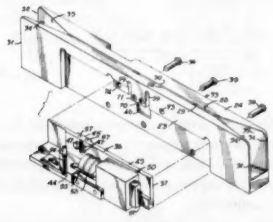
means driving said belt for movement over bearing surface means in the direction of document motion along said path.

4,260,880

OPTICAL CHARACTER SCANNER

Robert J. Thomas, Spokane, Wash., assignor to Key Tronic Corporation, Spokane, Wash.

Filed Dec. 12, 1979, Ser. No. 102,664
Int. Cl.³ G06K *7/14, 9/00;* **G08C** *9/06*
U.S. Cl. 235—454 **7 Claims**



1. An optical character scanning apparatus for reading a strip of visual indicia located along the face of a document, comprising:

a support frame having a stationary wall surface area adapted to be slidably engaged by the document face;

a viewing slot formed through the frame in open communication with said wall surface area;

an array of light-responsive sensors mounted to said frame;

lens means mounted to said frame intermediate the viewing slot and the array of light-responsive sensors for focusing light reflected through the viewing slot onto the array of light-responsive sensors;

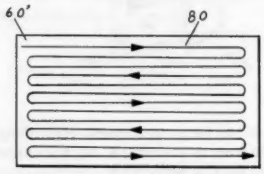
and means for fixedly mounting the frame to a document guiding apparatus, whereby optical alignment of the viewing slot, array of light-responsive sensors and lens means may be accomplished on the frame prior to such mounting.

4,260,881

ELECTRONIC STATUS DETERMINING LABEL

Glen Peterson, 540 S. 83 E. Ave., Tulsa, Okla. 74112

Division of Ser. No. 735,070, Oct. 22, 1976, Pat. No. 4,158,434, which is a continuation-in-part of Ser. No. 874,760, Nov. 7, 1969, Pat. No. 4,055,746. This application May 4, 1979, Ser. No. 36,376
Int. Cl.³ G06K *19/06*
U.S. Cl. 235—493 **10 Claims**



1. A electronic status determining label for goods in sheet form, responsive to a magnetic field varying at a predetermined fundamental frequency, said label providing for the storage of no more than two bits of information and comprising at least:

a sheet of ferromagnetic substance having active and inactive states;

said active state comprised of a multiplicity of long magnetically saturated lines, or grooves, on either side of which is non-saturated ferromagnetic material;

said inactive state provided in one of two ways:

the absence of a multiplicity of long lines of magnetically saturated lines, or grooves, said ferromagnetic substance being magnetically uniform and unmagnetized throughout; or by

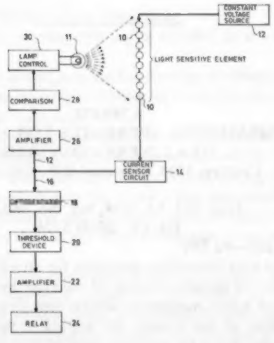
crossing lines of magnetic saturation which break the sheet of ferromagnetic substance into a multiplicity of small areas.

4,260,882

LIGHT SENSITIVE DETECTION CIRCUIT

Austen B. Barnes, 337 Sheppard Ave. E. Pickering, Toronto, Canada (L1V 1E6)

Filed May 17, 1978, Ser. No. 907,173
Int. Cl.³ G01J *1/32*
U.S. Cl. 250—205 **1 Claim**



1. Means for the detection of objects, said means comprising:

a light source,
a plurality of light sensitive electrical elements arranged to receive light from said source,
said light sensitive elements being connected in a series connection in an electrical circuit,
means connected to said series connection for producing a first signal varying as the impedance across said series connection,
means responsive to said first signal for causing alteration in the energization of said light source in a sense to reduce the difference between the value of said first signal and a predetermined desired value therefor,
means for detecting the rate of change in impedance across said series connection and for producing a second signal varying with said rate of change,
means responsive to a value of said second signal corresponding to a rate of change above a predetermined value for producing a control signal.

4,260,883

OPTICAL MEASUREMENT SYSTEM

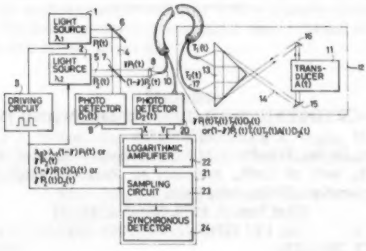
Seiichi Onoda, Tokorozawa; Shoji Yamada, Hachioji; Yasuo Minai; Minoru Maeda, both of Hinodemachi; Shin Kita, Kokubunji, and Mitsuo Tanaka, Ohme, all of Japaa, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 14, 1979, Ser. No. 12,026

Claims priority, application Japan, Feb. 15, 1978, 53-15395; Jul. 26, 1978, 53-90465

Int. Cl.[3] **G01N** *2/22*

U.S. Cl. 250—226 **8 Claims**



1. An optical measurement system comprising:
(a) optical signal source means for generating first and second pulse-shaped optical signals of different wavelengths,
(b) an optical differential means for converting the physical change of a measured object into a displacement and for differentially varying the quantities of different wavelengths,
(c) first and second photodetector means for converting the output lights of said optical signal source means and said optical differential means into input electric signals, respectively,
(d) optical transmission lines coupling said optical signal source means and said optical differential means, and for coupling said optical differential means and said second photodetector means, respectively, and
(e) a signal processing circuit means for a measurement output indicative of the physical change of the measured object as a function of the output electric signals of said first and second photodetector means for the first optical signal and an output ratio of said output electric signals of said first and second photodetector means for the second optical signal.

4,260,884

CORONA DISCHARGE DEVICES

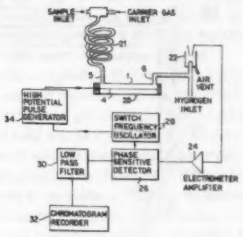
James E. Lovelock, Launceston, England, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 13, 1978, Ser. No. 885,749

Claims priority, application United Kingdom, Mar. 11, 1977, 10332/77

Int. Cl.[2] **H01T** *19/04;* **G01T** *1/185*

U.S. Cl. 250—324 **9 Claims**



1. A corona discharge device comprising an ionisation chamber having associated electrodes and inlet and outlet means for passage of a gas flow through the chamber, means for establishing corona discharge current pulses between said electrodes in said chamber to effect ionisation within the chamber, said pulses having a duration less than one microsecond.

5. A solute switching system comprising a solute switch for modulating solute concentration in a gas flow and a detector for receiving gas flow from the switch, the switch comprising a corona discharge device operable at ambient pressure and at a variable switching frequency to give low intensity corona discharge pulses which produce reactive species to react with solute flowing through the device, the resulting fluctuations in the solute concentration entering the detector producing corresponding fluctuations in detector output signal and which are indicative of the presence of the solute in the gas flow.

4,260,885

SELECTABLE WAVELENGTH X-RAY SOURCE, SPECTROMETER AND ASSAY METHOD

Richard D. Albert, 317 Hartford Dr., Danville, Calif. 94526

Continuation of Ser. No. 736,584, Oct. 28, 1976, abandoned, which is a continuation of Ser. No. 633,980, Nov. 20, 1975, Pat. No. 4,048,496, which is a continuation of Ser. No. 353,451, Apr. 24, 1973, Pat. No. 3,925,660, said Ser. No. 353,451, is a continuation-in-part of Ser. No. 251,378, May 8, 1972, abandoned. This application Feb. 24, 1978, Ser. No. 881,035

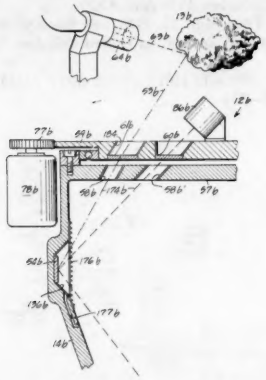
The portion of the term of this patent subsequent to Dec. 9, 1992, has been disclaimed.

Int. Cl.[3] **G01N** *23/20;* **G21K** *1/00, 7/00*

U.S. Cl. 250—277 R **11 Claims**

1. In a spectrometer system for X-ray energy analysis of a sample, the improvement comprising:
shielded detector means deployed to detect the quantity and characteristic wavelength of fluorescent X-rays from said sample upon its excitation;
an X-ray spectroscopy tube emitting primary X-rays from an internal primary target;
rotatable means carrying an array of secondary targets of differing composition and indexible to expose one secondary target at a time to primary X-rays emitted from the

primary target and thereby to induce fluorescent X-ray emission from said one secondary target; and



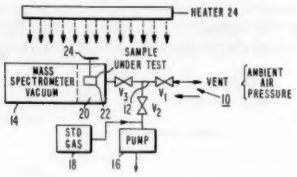
collimating means shielding said sample from primary X-rays and directing them only to said one secondary target.

4,260,886

MEASUREMENT OF A GAS CONSTITUENT BY A MASS SPECTROMETER

Carlo Grilletto, Upper Black Eddy, Pa., and Frank C. Vowinkel, White House Station, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 7, 1979, Ser. No. 73,199
Int. Cl.[3] B01D *59/44*
U.S. Cl. 250—288 **6 Claims**



1. In a mass spectrometer system including means for analyzing a gas constituent at a first pressure and means for piercing a hermetically sealed package of a given volume and for injecting the sealed atmosphere of said package into said analyzing means for determining the content of said constituent in said sealed atmosphere, said analyzing means analyzes tending to be a function of the injection rate and volume of said atmosphere, means for calibrating said spectrometer comprising:

means for injecting a calibration gas into said spectrometer having a volume and injection rate about the same as the atmosphere from the package upon said piercing.

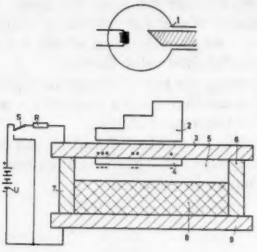
4,260,887

ELECTRORADIOGRAPHIC RECORDING DEVICE

Horst Dannert, Aachen-Walheim, and Hans-Jürgen Hirsch, Selfkant-Tüddern, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 6, 1977, Ser. No. 830,629
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1976, 2641067
Int. Cl.[3] G03B *41/16*
U.S. Cl. 250—315.2 **7 Claims**

1. In an electroradiographic recording device having a source of X-rays, a first electrode adapted for passing X-rays spaced from said X-ray source and defining therebetween a recording space for an object to be examined, a layer of dielectric material disposed on the side of said first electrode remote from said recording space, a second electrode spaced from said first electrode, a photoconductive layer disposed on the side of said second electrode adjacent said dielectric material, said photoconductive layer and said dielectric material being spaced from each other to define a gas gap therebetween, said



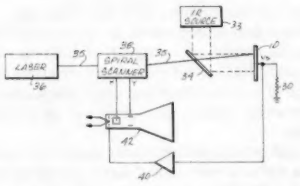
gas gap being bounded by at least one side wall arranged between said electrodes, and a direct voltage source connected between said electrodes, an improvement wherein said photoconductive layer comprises a granular photoconductive material in a binder, said gas gap between said dielectric material and said photoconductive layer is between 50 μm and 500 μm wide, and said first electrode has a surface resistance between 10^3 to 10^8 Ohms per square.

4,260,888

NON-CRYOGENIC INFRARED POSITION AND IMAGE SENSOR

Sandor Holly, Woodland Hills, and Emery Erdelyi, Canoga Park, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 7, 1979, Ser. No. 92,131
Int. Cl.[3] H01J *31/49*; H04N *5/33*
U.S. Cl. 250—330 **13 Claims**

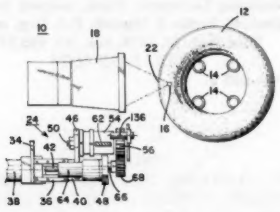


1. Apparatus for generating a visual image of an infrared radiation source, comprising: a light-sensitive thin silicon disk, means directing an infrared image onto one surface of the silicon disk, a light beam source, means scanning the light beam across said one surface of the disk in a predetermined pattern, means including a central electrode on the opposite surface from said one surface for applying a bias voltage to the disk, visual display means including a cathode ray beam tube, means responsive to changes in current in the central electrode of the disk for controlling the intensity of the cathode ray beam, and means for scanning the cathode ray beam in synchronism with and in the same pattern as the light beam.

4,260,889
DEFECT MARKER METHOD AND APPARATUS FOR USE WITH TIRE INSPECTION MACHINES

William E. Osborn, Copley, and Ronald E. Symens, Canal Fulton, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Nov. 28, 1979, Ser. No. 98,148
Int. Cl.[3] G01N *23/00*
U.S. Cl. 250—358 T 24 Claims

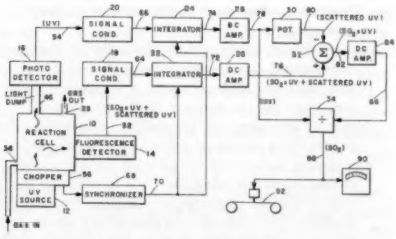


1. A method for precisely marking a defect area on a tire being inspected on a tire inspection machine while the image of the portion of said tire, containing said defect, is being displayed on a monitor screen, said method comprising the steps of: (a) extending a defect marker mechanism, from an inactive position beside the imaging unit of said inspection machine, axially forwardly relative to said imaging unit; (b) interposing a portion of said marker mechanism between said tire and said imaging system in a manner so that said portion of said mechanism is visible on said monitor screen; (c) aligning target means, on said portion of said mechanism, so that the major axis of said target means is perpendicular to said defect area; and (d) marking said defect area with a visually discernible mark via marking means whose major axis is coaxial with the major axis of said target means.

4,260,890
FLUORESCENT GAS ANALYZER

Steven A. Wright, San Diego, and Donald A. Watts, Ramona, both of Calif., assignors to Monitor Labs, Incorporated, San Diego, Calif.

Filed Jun. 25, 1979, Ser. No. 51,498
Int. Cl.[3] G01J *1/42;* G01N *21/64*
U.S. Cl. 250—373 8 Claims



1. A fluorescent gas analyzer, comprising;

a reaction cell having inlet and outlet ports for enabling gas flow through the cell;

an excitation energy source coupled to the reaction cell for radiating the interior of the cell with excitation energy that causes a given gas to fluoresce in a given wavelength;

a first detector coupled to the reaction cell for detecting fluorescence in the given wavelength and for providing a first signal that is proportional to the intensity of said detected fluorescence and the intensity of detected scattered excitation energy radiated from the excitation energy source;

a second detector coupled to the reaction cell for detecting excitation energy radiated from the excitation energy source, and for providing a second signal that is proportional to said detected excitation energy;

a first circuit coupled to the first detector for responding to the first signal to provide a third signal having a level bearing a given proportional relationship to the sum of the quantity of said fluorescence detected by the first detector over a predetermined interval and the quantity of said scattered excitation energy detected by the first detector over said predetermined interval;

a second circuit coupled to the second detector for responding to the second signal to provide a fourth signal having a level bearing said given proportional relationship to the quantity of said excitation energy detected by the second detector over said predetermined interval;

a third circuit coupled to the second circuit for factoring the fourth signal to provide a fifth signal having a level bearing said given proportional relationship to the quantity of said scattered excitation energy detected by the first detector over said predetermined interval;

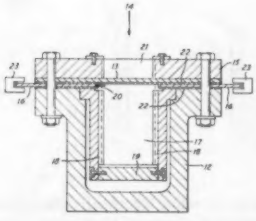
a fourth circuit coupled to the first and third circuits for providing a sixth signal having a level bearing said given proportional relationship to the difference between the levels of the third and fifth signals, to thereby provide a signal having a level bearing said given proportional relationship to the quantity of said fluorescence detected by the first detector over said predetermined interval; and

a fifth circuit for dividing the sixth signal by the fourth signal to provide a seventh signal having a level that is proportional to the concentration of said gas that fluoresces within the reaction cell in response to said excitation energy over said predetermined interval.

4,260,891
RADIATION DETECTORS

Anthony M. Williams, Iver, England, assignor to EMI Limited, Hayes, England

Filed Jul. 31, 1979, Ser. No. 62,328
Claims priority, application United Kingdom, Aug. 4, 1978, 32323/78
Int. Cl.[3] G01T *1/18;* G01N *21/00*
U.S. Cl. 250—385 11 Claims



1. A pressure vessel having an aperture therein and including a connection means which comprises a circuit board, having conducting tracks, mounted in the aperture such that the conducting tracks form electrical connections between the inside and the outside of the pressure vessel.

4,260,892

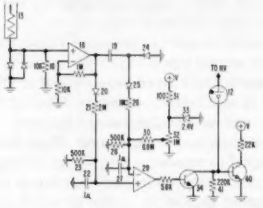
GEIGER-MUELLER RADIATION DETECTOR WITH MEANS FOR DETECTING AND INDICATING THE EXISTENCE OF RADIATION OVERLOAD

Terrence Kovacs, North Plainfield; Allen P. Mills, Jr., New Providence, and Loren N. Pfeiffer, Harding Township, Morris County, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 22, 1979, Ser. No. 68,604

Int. Cl.[3] G01T *1/18*

U.S. Cl. 250—388 **9 Claims**



1. A radiation detector of the Geiger-Mueller type comprising

(a) a sealed detector tube having an anode and a cathode, and containing ionizable gas,

(b) detector means for detecting the existence of an overload condition of the radiation detector due to excessive radiation reaching the detector tube, and

(c) indicating means for indicating the detection of such overload condition,

characterized in that

(d) the detector means comprises AC-detector means for detecting the existence of an AC-component of the current between the anode and the cathode that is smaller than a predetermined fraction of the total current between the anode and the cathode, thereby indicating the existence of "space charge failure" of the radiation detector.

4,260,893

DEVICE FOR DIRECTING ELECTRICALLY CHARGED PARTICLES TOWARDS A TARGET

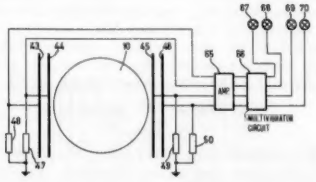
Pieter Bakker, Amsterdam; Rudolf S. Kuit, Leiden, and Jarig Politiek, Amsterdam, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 7, 1979, Ser. No. 36,943

Claims priority, application Netherlands, May 12, 1978, 7805137

Int. Cl.[3] H01J *37/00*

U.S. Cl. 250—397 **6 Claims**



1. A device for directing electrically charge particles toward a target comprises a source of electrically charged particles, means for accelerating said particles, and deflecting means for controlling a beam of said charged particles in two mutually perpendicular directions, CHARACTERIZED IN THAT at least two juxtaposed rods of electrically conductive material are positioned at opposite sides of said target for detecting said beam, each of said rods being connected to a fixed potential by a resistor, and control means also being connected to each of said rods are provided for reacting to a voltage formed across said resistors if said beam impinges on said rods, said control means producing a correction voltage on said deflection means if said beam impinges on a combination of said rods other than ones closest adjacent said target.

4,260,894

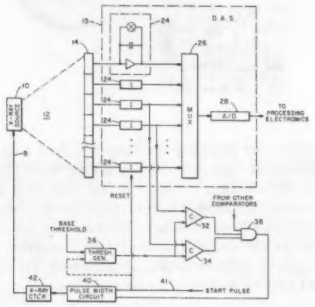
OPTIMUM DOSE TOMOGRAPHY SCANNING SYSTEM

Leopold Neumann, Lexington, Mass., assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 30, 1978, Ser. No. 965,152

Int. Cl.[3] G03B *41/16*

U.S. Cl. 250—445 T **1 Claim**



1. In a tomography system for producing a cross-sectional image of a body,

a radiation source providing a fan-shaped beam of radiation,

a detector array including a series of detectors arranged to simultaneously receive radiation from said source after transmission through a body layer to be examined, each detector producing an output signal representative of the level of received radiation,

a series of resettable integrators each connected with a respective one of said series of detectors and operable during a radiation exposure cycle to integrate the respective output signal therefrom and each having an output to supply an integrated output signal representing the time integral of the radiation received by such detector during a radiation exposure cycle,

start means for supplying a start signal for starting each of a series of radiation exposure cycles and for resetting the resettable integrators at the start of each radiation exposure cycle,

control means, connected to said radiation source and to said start means, and responsive to said start signal, for causing said radiation source to emit a fan-shaped beam of radiation upon the occurrence of the start signal,

threshold setting means for setting a threshold value and for producing a threshold value signal representative thereof,

monitoring means connected with the outputs of a plurality of said resettable integrators for monitoring the integrated output signals respectively supplied by said plurality of resettable integrators, said monitoring means comprising a plurality of comparators each operative to compare two input signals and produce a comparator output signal representative of the relative magnitudes thereof, each comparator receiving as one input thereto a respective one of the integrated output signals, and as the other input thereto receiving the threshold value signal from said threshold setting means, and

gate means responsive to said comparator output signals for producing a gating output signal only when all of the integrated output signals have exceeded the threshold value as set by said threshold setting means, and

means for coupling said gating output signal to said control means,

said control means being responsive to said gating output signal to cause the radiation source to cease producing said fan-shaped beam of radiation, upon exceedance of the threshold value by the integrated output signals of all of said plurality of resettable integrators connected with said monitoring means.

4,260,895

RADIATION DIAGNOSTIC APPARATUS FOR GENERATING TOMOGRAPHIC IMAGES

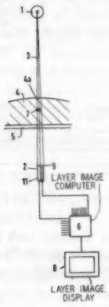
Rudolf Schittenhelm, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 21, 1979, Ser. No. 50,870

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1978, 2831038

Int. Cl.³ A61B *6/00*

U.S. Cl. 250—445 T **3 Claims**



1. Radiation diagnostic apparatus for the generation of tomographic images of an exposure subject with a positioning means for an exposure subject; with a measuring arrangement for the irradiation of the exposure subject from different directions; the measuring arrangement comprising a radiation source which emits a radiation beam penetrating the layer to be examined, the dimension of said beam perpendicular to the layer plane being substantially equal to the layer thickness, and a radiation receiver which supplies electric output signals corresponding to the measured radiation intensity, and a computer connected to the radiation receiver for the calculation of the attenuation values of specific image points of the irradiated body layer from the output signals of the radiation receiver; characterized in that detectors (**9***b* through **9***n*) are provided in the radiation receiver (**2**), and in that absorber means (**9***o* through **9***z*) is located in said radiation receiver and is located with said radiation receiver on the side of the positioning means (**5**) opposite the radiation source (**1**) so as to intercept the radiation beam from said source after penetration by said beam of the layer to be examined, said detectors (**9***b* through **9***n*) being disposed for sensing beam intensity after passage of the beam through said absorber means (**9***o* through **9***z*) so that the radiation hardening of the received radiation can be determined from the output signals of these detectors (**9***b* through **9***n*).

4,260,896

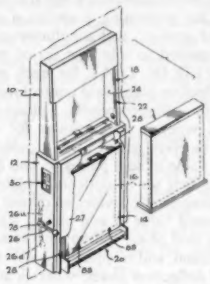
X-RAY UNIT

Gunter Schmidt, Malibu, Calif., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Continuation-in-part of Ser. No. 805,815, Jun. 13, 1977, abandoned. This application Jul. 17, 1978, Ser. No. 925,554

Int. Cl.³ G03B *41/16*

U.S. Cl. 250—468 **5 Claims**



1. An X-ray unit comprising:

an upright mounting frame;

a flexible resilient front sheet having opposite sides held to said frame, said flexible, resilient front sheet being formed of a thin polyester material;

a flexibly resilient backing plate lying behind and normally spaced from said flexible sheet;

an intensifier screen attachable to said backing plate to lie facewise against a sheet of film;

pressing means including an upright bar disposed along the middle portion of said backing plate which lies between said opposite sides of said front sheet for applying bending force to said plate; and

means for moving said bar to move said backing plate into engagement with said sheet, the engagement of said backing plate with said film sheet being adapted to bend and tension said backing plate, said screen, the film sheet and said front sheet to hold them in intimate contact.

4,260,897

METHOD OF AND DEVICE FOR IMPLANTING IONS IN A TARGET

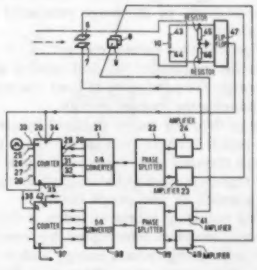
Pieter Bakker, Amsterdam; Rudolf S. Kuit, Leiden, and Jarig Politiek, Amsterdam, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 7, 1979, Ser. No. 36,942

Claims priority, application Netherlands, May 12, 1978, 7805138

Int. Cl.³ H01J *37/00*

U.S. Cl. 250—492 A **8 Claims**



1. A device for implanting ions in a target comprising an ion

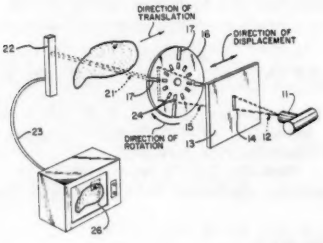
source; means for accelerating ions and forming said ions into an ion beam; means including two mutually perpendicular sets of deflection plates connected to voltage sources for deflecting said ion beam to a target; and control means connected to each of said sets of deflection plates for adjusting voltage differences between said deflection plates, said control means providing a varying voltage to a first set of said deflection plates and a constant voltage to a second set of said deflection plates, wherein after said ion beam has completed a stroke across said target said control means transmits a signal to said second set of deflection plates for generating a variation of said constant voltage by a fixed amount, and simultaneously reverses said varying voltage applied to said first set of deflection plates, CHARACTERIZED IN THAT for each of said first and second sets of deflection plates said control means comprises a counter, a digital-to-analog converter, a phase splitter, and two output amplifiers, wherein said counter for said first set of deflection plates receives pulses from a pulse osciilator, and passes a summed value of said pulses to said digital-to-analog converter for said first set of deflection plates; wherein said digital-to-analog converter provides an output voltage proportional to said summed value of said pulses; wherein said outut voltage is split by said phase splitter into symmetrical signals with respect to ground, and is applied by said output amplifiers to said first set of deflection plates; wherein at the end of said stroke of said ion beam, said control means applies a voltage pulse to said counter of said second set of deflection plates so that in said digital-to-analog converter of said second set of deflection plates the applied voltage is influenced by one step to vary voltage at said second set of deflection plates by said fixed amount; and wherein input of said counter of said first set of deflection plates is simultaneously influenced so that said pulses are counted in an opposite sense.

4,260,898

X-RAY IMAGING VARIABLE RESOLUTION

Martin Annis, Newton, Mass., assignor to American Science and Engineering, Inc., Cambridge, Mass.

Continuation of Ser. No. 782,973, Mar. 30, 1977, abandoned.
This application Sep. 28, 1978, Ser. No. 946,913
Int. Cl.[2] G03B *41/16*
U.S. Cl. 250—505 **22 Claims**



1. A radiant energy image scanner which is capable of adjusting a characteristic of an image produced thereby, said scanner comprising:

a source of penetrating radiant energy,

scanning means responsive to said source of penetrating radiant energy for producing at least one scanning pencil beam of penetrating radiant energy,

radiant energy detector means scanned by said at least one scanning pencil beam to provide an image signal,

display means responsive to said image signal for producing an image representative of the radiant energy response of a region scanned by said pencil beam,

in which said scanning means includes, a first rotating energy opaque member intercepted by energy from said source of penetrating radiant energy with at least two sets of energy transparent areas thereon, a first set of areas each of area A_1 and number N_1 and a second set of areas each of area A_2 and number N_2, wherein at least one of A_1 or N_1 is not equal to A_2 or N_2, respectively,

a second energy opaque member intercepted by energy from said source of penetrating radiant energy with at least two energy transparent areas thereon,

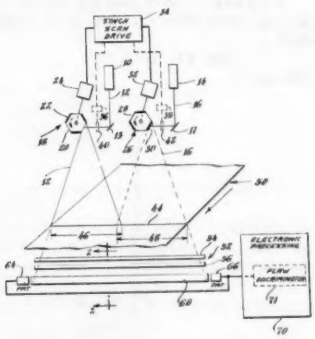
and selection means for relatively positioning said first and second members to align a selected area of said second member with different ones of areas of one of said sets of areas of said first member and said source of penetrating radiant energy as said first member rotates.

4,260,899

WIDE WEB LASER SCANNER FLAW DETECTION METHOD AND APPARATUS

Cole H. Baker, Westport, Conn., assignor to Intec Corporation, Trumbull, Conn.

Filed Jun. 14, 1979, Ser. No. 48,623
Int. Cl.[3] G01N *21/88*
U.S. Cl. 250—563 **7 Claims**



1. A wide web laser scanner flaw detection system for inspection of wide web materials comprising:

(a) a plurality of lasers for emitting a plurality of laser beams,

(b) a plurality of aligned synchronized rotary scanner means for repetitively scanning said sources in sequence in a predetermined scan path over the material being examined, each of said laser beams scanning a portion of a scan line,

(c) said rotary scanner means being selectively blanked in sequence such that only one rotary scanner is scanning a laser beam on a portion of a line scan on said material in any given time interval,

(d) said blanking being staggered on said plurality of rotary scanner means such that one complete scan line is formed across the material by consecutive sequential alternating scans of each of said laser beams by each of said rotary scanning means,

(e) means for moving said web in a direction transversely with respect to said scan line for providing a raster type scan pattern of said material being inspected,

(f) receiver means having detector means positioned for receiving radiation applied by said laser beams from the material being inspected,

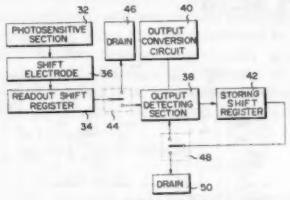
(g) said detector means generating signals in response to the intensity of radiation from said laser beams applied thereto from the material being inspected, and

(h) electronic processing means having said detector signals applied thereto for processing said signals to detect and locate flaws in the material being inspected.

4,260,900
CHARGE-TRANSFER IMAGE SENSOR

Kenichi Matsui, Ayase, and Nobuo Suzuki, Kamakura, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Feb. 15, 1979, Ser. No. 12,454
Claims priority, application Japan, Feb. 16, 1978, 53-15876
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—578 **8 Claims**



1. A charge-transfer image sensor including a semiconductor substrate, comprising

(a) photosensitive means for receiving a light signal to produce a charge packet corresponding to the intensity of the light signal;

(b) a readout shift register for reading out charge packets;

(c) output detecting means for storing the charge packet transferred from said readout shift register and detecting the amount of charge of the packet;

(d) an output conversion circuit for producing an output voltage signal corresponding to the amount of charge of the packet detected at said output detecting means;

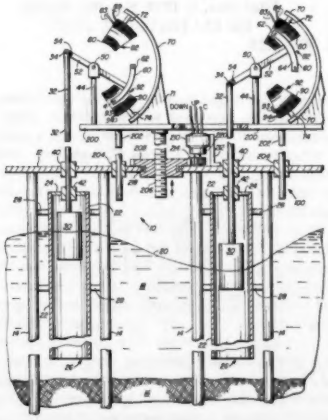
(e) a storing shift register for storing the charge packets transferred from said output detecting means and permitting the charge packet to be circulated therein; and

(f) drain means for draining the charge packet transferred from the storing shift register.

4,260,901
WAVE OPERATED ELECTRICAL GENERATION SYSTEM

David D. Woodbridge, 9190 Red Branch Rd., Columbia, Md.

Filed Feb. 26, 1979, Ser. No. 15,242
Int. Cl.³ F03B *13/12*; E02B *9/08*
U.S. Cl. 290—42 **10 Claims**



1. A system for converting the mechanical energy in the wave motion of a body of water into electrical energy comprising in combination:

a frame being fixed with respect to said wave motion of said water;

flotation means buoyantly supported by said water, for following said wave motion;

a subframe attached to said frame and movable in the vertical plane with respect thereto;

a first pivot shaft supported by said subframe;

a pivot arm attached to said flotation means, with said pivot arm rotatable about said first pivot shaft;

means including means for generating magnetic flux and electrical conductor means coupled to said subframe and said pivot arm for generating electrical voltages from the relative motion therebetween, said magnetic flux means comprising at least one magnet having a pair of poles, and said electrical conductor means comprises a pair of essentially cylindrical coils of electrically conducting cable, each of said coils having a cylindrical coaxial void therethrough, said coils being arranged such that one pole of said magnet is penetrating the void of one of said coils while the other pole of said magnet is withdrawing from the void of the other one of said coils;

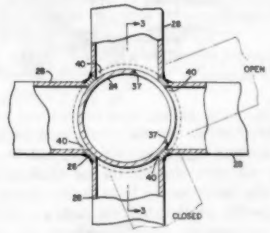
voltage comparison means connected to said pair of coils for producing a control signal when the voltages across said pair of coils are not equal; and

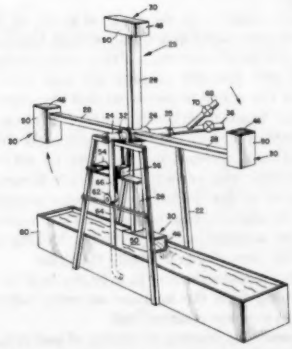
subframe positioning means connected to said subframe and to said voltage comparison means, said positioning means responsive to such control signal for vertically positioning said subframe relative to said flotation means so as to produce essentially equal electrical energy from each one of said pair of coils.

4,260,902
FLUID-DRIVEN ROTARY ENGINE

William A. Crider, 1216 Kelley St., SW., Vienna, Va. 22180

Filed Nov. 28, 1978, Ser. No. 964,171
Int. Cl.³ F03B *13/00, 13/10*; H02P *9/04*; F03B *17/06*
U.S. Cl. 290—43 **13 Claims**





1. A fluid driven rotary engine comprising a stationary axle

having an interior space for receiving water or other liquid under pressure from an external source, and at least one spoked wheel assembly rotatable about the axis of said axle and comprising a hub rotatably supported on said axle, a set of angularly spaced apart wheel spokes extending radially from said hub and fixed at their inner ends to said hub for rotation therewith, a set of liquid collection containers each associated with and fixed to a different one of said spokes at the outer end thereof, each of said spokes being hollow and opening into the interior of the container that is fixed thereto, and said axle and said hub having apertures arranged to establish fluid communication between said interior space and each spoke for enabling liquid to flow through each spoke to the container at the outer end thereof for collection in the container as each spoke rotates through a pre-selected segment of the circular path of motion of said wheel assembly, said wheel assembly being rotated in a pre-selected direction by the force-exerting weight of the liquid collected in said containers, and each of said containers having an open end and being arranged to dump the liquid collected therein through its open end as it is rotated with its associated wheel spoke beyond said pre-selected segment.

4,260,903

LOCKING DEVICES FOR ELECTRIC STARTER ACTUATORS

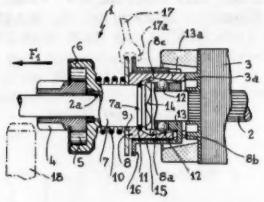
Alfred B. Mazzorana, Venissieux, France, assignor to Societe de Paris et du Rohne, Lyons, France

Filed Nov. 6, 1978, Ser. No. 957,969

Claims priority, application France, Nov. 18, 1977, 77 35294

Int. Cl.³ F02N *15/06*

U.S. Cl. 290—48 **6 Claims**



1. In a starter for an internal combustion engine, the starter having an armature supported on a shaft, and the starter having an actuator assembly slidable on the shaft and including a pinion, and the starter having lever means operable to slide the actuator assembly on the shaft through a stroke from a rest position to an engaged position wherein the pinion meshes with the flywheel of the engine, a locking system for locking the actuator assembly to the shaft when in the rest position, comprising:

(a) a cage slidable on the shaft adjacent to the actuator assembly and containing multiple balls disposed about the shaft, the cage carrying a flange engaged by the lever means and operable to slide the cage along the shaft toward the actuator means so that the cage moves the actuator means toward said engaged position;

(b) a sleeve carried by the actuator assembly and extending toward and surrounding the cage to retain the balls therein, the inner surface of the sleeve being concial and shaped to wedge the balls in locking engagement against the shaft when the cage is urged to slide on the shaft away from the actuator assembly, thereby locking the actuator assembly through the sleeve to the shaft;

(c) resilient means operative to urge the cage to slide on the shaft away from the actuator assembly when the lever means is in a rest position; and

(d) and means for limiting the stroke of said actuator assembly to stop it in said engaged position.

4,260,904

POWER FEED CONTROL DEVICE FOR COPYING APPARATUS

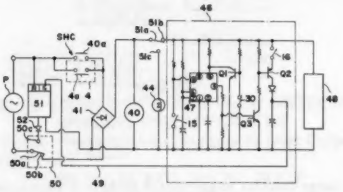
Yoshihiro Horie, Toyokawa; Kenzo Nagata, Okazaki, and Manabu Hatano, Toyohashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 12, 1979, Ser. No. 74,678

Claims priority, application Japan, Sep. 19, 1978, 53/129282[U]

Int. Cl.³ G03G *15/00*

U.S. Cl. 307—113 **4 Claims**



1. In a power feed control device for copying apparatus which comprises:

a power source;

a drive circuit and a jam detection circuit connected to said power source;

a power feed control relay having a change-over switch switchable between a first contact for connection with said drive and jam detection circuits and a second contact for out of connection therewith;

an outer cover for access into interior of the copying apparatus; and

a cover switch actuatable by opening and closing actions of said cover and switchable between a normally opened contact when the cover is opened and a normally closed contact when the cover is closed, said switch being so arranged to be connected with said power source and said drive and jam detection circuits when at said normally closed contact and to be connected with said control relay when at said normally opened contact.

4,260,905

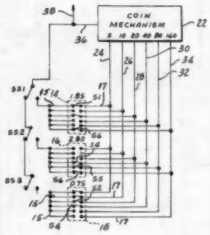
DEVICE FOR SETTING DIP SWITCHES

Frank T. Scalera, Maplewood, N.J., assignor to Rowe International Inc., Whippany, N.J.

Filed Nov. 1, 1979, Ser. No. 90,504

Int. Cl.³ H01H *3/02, 27/00*

U.S. Cl. 307—115 **10 Claims**



4. In a merchandising machine control circuit having a plurality of price lines and a plurality of selection switches and a plurality of assemblies each having a body of a certain outline configuration carrying a plurality of switches and a plurality of aligned closely spaced switch actuators each of which is movable between two positions corresponding to the respective states of the switches associated therewith to connect certain

of said price lines to one of said selection switches to set the price of the article corresponding to said one switch, a device for individually setting the switches of said assemblies including in combination, a housing forming an opening having an outline configuration conforming to that of said body to permit said housing to receive said body through said opening, a plurality of operating arms, means mounting said operating arms in said housing with an interarm spacing corresponding to the spacing between said actuators and for pivotal movement around an axis generally parallel to the direction of alignment of said actuators between respective positions at which they move actuators positioned adjacent thereto between said two positions, a plurality of offset handles connected to said operating arms, said handles having progressively greater offsets with reference to the direction of alignment of said actuators whereby said handles have an interhandle spacing which is appreciably greater than the spacing between adjacent actuators.

4,260,906

SEMICONDUCTOR DEVICE AND LOGIC CIRCUIT CONSTITUTED BY THE SEMICONDUCTOR DEVICE

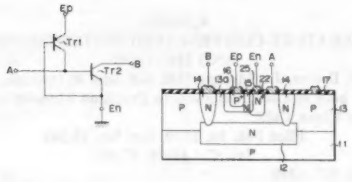
Yukuya Tokumaru, and Masanori Nakai, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Continuation-in-part of Ser. No. 709,600, Jul. 29, 1976, abandoned. This application May 15, 1978, Ser. No. 906,021

Claims priority, application Japan, Jul. 31, 1975, 50-93759; Jul. 31, 1975, 50-93760; Jul. 31, 1975, 50-93761; Jul. 31, 1975, 50-93763; Aug. 6, 1975, 50-95637; Aug. 8, 1975, 50-96478

Int. Cl.[3] **H03K** *19/091;* **H01L** *27/04*

U.S. Cl. 307—477 **8 Claims**



1. An integrated injector logic semiconductor device having at least one input terminal and at least one output terminal, which comprises a semiconductor substrate of one conductivity type; at least one region buried in the semiconductor substrate with the opposite conductivity type thereto; an isolating region formed in the semiconductor substrate with the opposite conductivity type thereto and extending from said surface of the semiconductor substrate into said buried region to form at least one isolated region with the same conductivity type as the semiconductor substrate, said isolating region and isolated region being connected to said output terminal and input terminal respectively; a first region formed in the isolated region with the opposite conductivity type to the semiconductor substrate to be uncontacted with the buried region and isolating region, said first region including a main region and an auxiliary region in contact with said main region and at a higher impurity concentration than said main region; and a second region formed in the main region of said first region with the same conductivity type as the semiconductor substrate, whereby a first vertical transistor of one polarity is constituted by said second region, said first region and said isolated region acting as emitter, base and collector, respectively, said emitter and base being forwardly biased and a second vertical transistor of opposite polarity is constituted by said first region, said isolated region and said buried region acting as emitter, base and collector respectively.

4,260,907

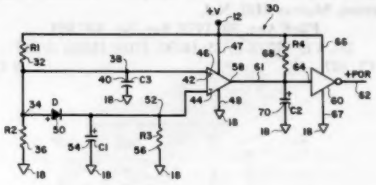
POWER-ON-RESET CIRCUIT WITH POWER FAIL DETECTION

Joseph P. Winebarger, Knightdale, N.C., assignor to Telex Computer Products, Inc., Raleigh, N.C.

Filed Jun. 12, 1979, Ser. No. 47,898

Int. Cl.[3] **H03K** *5/01, 21/32*

U.S. Cl. 307—264 **3 Claims**



1. A power-on-reset circuit with power fail detection, comprising;

(a) a power supply terminal having voltage V;

(b) a first resistor R1 connected at one terminal to V, and the other terminal to a second resistor R2, the second terminal of R2 connected to ground; the potential of the junction between R1 and R2 a selected fraction of V;

(c) a voltage comparator having an open collector, with its power supply connected to V; the (+) input terminal connected to said junction; the (−) input terminal connected to ground through a first capacitor C1 and a third resistor R3 in parallel; a diode D connected from said junction to said (+) input;

(d) the output terminal of said comparator connected to V through a fourth resistor R4 and to ground through a second capacitor C2;

(e) an inverting gate with its input connected to said comparator output terminal;

(f) the output of said inverting gate comprising said power-on-reset terminal.

4,260,908

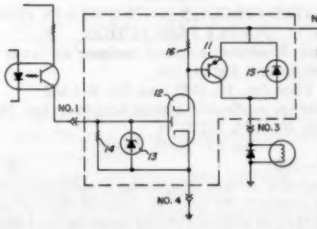
MICROELECTRONIC REMOTE SWITCHING CIRCUIT

Joe D. Mings, McKinney, and Manuel L. Torreno, Jr., Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 30, 1978, Ser. No. 938,151

Int. Cl.[3] **H03K** *17/12, 17/687, 3/42, 17/78*

U.S. Cl. 307—270 **8 Claims**



1. An optoelectronic control system for switching power to

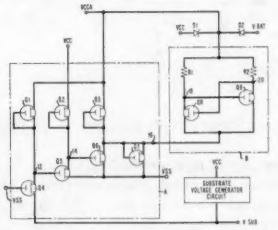
an inductive or resistive circuit load, comprising means for generating an optical input signal, means for converting the optical signal to an electronic signal, and electronic means responsive to said electronic signal for switching a high-voltage power supply to said circuit load; said switching means including an MOS power transistor having its gate coupled to receive said electronic signal, its source grounded, and its drain coupled to the base of a PNP transistor whose emitter is coupled to said power supply, and whose collector is coupled to a circuit load requiring up to 20 amperes of current, said switching means having the capability to conduct such current.

4,260,909

BACK GATE BIAS VOLTAGE GENERATOR CIRCUIT

Austin C. Dumbri, Easton, and Walter Rosenzweig, Allentown, both of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 30, 1978, Ser. No. 937,951
Int. Cl.³ H03K *3/35;* H03L *1/00;* H03K *3/353*
U.S. Cl. 307—297 **9 Claims**



1. A circuit for providing control of the back bias voltage on semiconductor devices included in a semiconductor substrate including a gate circuit and being characterized in that:

the gate circuit (A, **24**) comprises two input terminals and an output terminal (**16**);

the first input terminal of the gate circuit (A, **24**) is couplable to a first power supply (VCC);

the second input terminal of the gate circuit (A, **24**) is couplable to the substrate;

the output terminal (**16**) of the gate circuit (A, **24**) is couplable to a non-substrate terminal of the devices whose back bias voltage is to be controlled;

and further characterized in that when potential levels of the substrate and the first power supply (VCC) are within preselected ranges then the potential of the output terminal (**16**) of the gate circuit (A, **24**) is at a first potential level, and if either or both of the potentials of the power supply (VCC) or the substrate (VSub) are outside of the preselected ranges then the output terminal (**16**) of the gate circuit (A, **24**) changes in potential to a second potential level which is different than the first potential level and which increases the back bias voltage on the semiconductor devices.

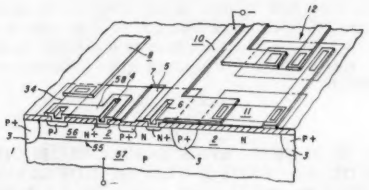
4,260,910

INTEGRATED CIRCUITS WITH BUILT-IN POWER SUPPLY PROTECTION

Derek Colman, Bromham, England, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 16, 1975, Ser. No. 541,462
Claims priority, application United Kingdom, Jan. 25, 1974, 3480/74; Mar. 20, 1974, 12299/74
Int. Cl.³ H01L *27/04*
U.S. Cl. 307—303 **18 Claims**

1. An integrated circuit comprising a semiconductor substrate of one conductivity type, an epitaxial layer of opposite conductivity type on a surface of said substrate, said integrated circuit including circuit elements in said epitaxial layer, a first d.c. supply conductor for said circuit elements, a second d.c. power conductor for connection to one pole of a d.c. power source, said first and second conductors disposed over and insulated from said epitaxial layer, a third d.c. power conductor for connecting the substrate to the other pole of said d.c. power source, means functionally connecting said circuit elements between said first and third conductors, and voltage/-current overload protection circuit means for said integrated circuit comprising depletion mode field effect transistor means separate from said functionally connected circuit elements and having a channel defined by a region of said epitaxial layer, a



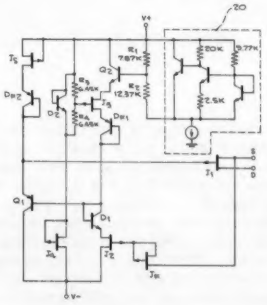
region of said substrate underlying said epitaxial region defining a gate region for said field effect transistor, said gate region connected to said third conductor, the channel of said field effect transistor serially connecting said first d.c. supply conductor to said second d.c. power conductor for limiting the maximum voltage that can be supplied by said power source across the second and third conductors to a value defined by the pinch-off voltage of said field effect transistor means and for limiting the maximum current flow between the second and third conductors to a value defined by the zero gate bias drain current of said field effect transistor means.

4,260,911

TEMPERATURE COMPENSATED SWITCHING CIRCUIT AND METHOD

Paul M. Brown, Jr., Morgan Hill, and Adib R. Hamade, Cupertino, both of Calif., assignors to Precision Monolithics, Inc., Santa Clara, Calif.

Filed Feb. 26, 1979, Ser. No. 15,249
Int. Cl.³ H03K *17/60*
U.S. Cl. 307—310 **24 Claims**



1. A junction FET switching circuit, comprising:

a junction FET having a gate, a source, a drain and a channel between said source and drain, said FET being connectable at its source and drain to provide a switching element, and the channel resistance varying in a known fashion with temperature and the gate-source voltage, and

a temperature compensation circuit means adapted to generate a temperature-dependent voltage having a voltage-temperature coefficient substantially equal to the FET

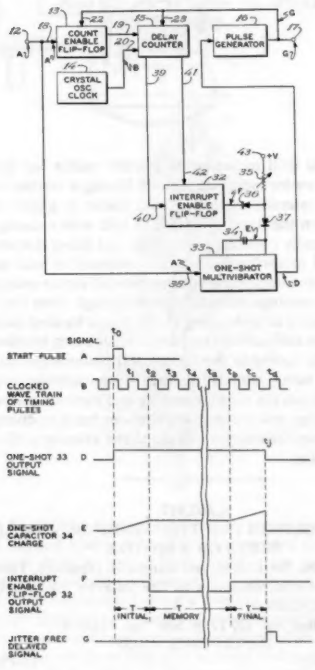
gate-source voltage-temperature coefficient required to maintain the channel resistance at a substantially constant level over a selected temperature range, said circuit means being connected to apply said voltage to the gate-source terminals of the FET, and thereby vary the gate-source voltage of the FET to maintain the channel resistance substantially constant over said temperature range.

4,260,912

DIGITAL DELAY GENERATOR

Merlin D. Bjorke, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 11, 1978, Ser. No. 968,535
Int. Cl.³ H03K *17/28, 17/296, 5/00*
U.S. Cl. 307—597 **19 Claims**



1. A digital delay generator for generating a virtually jitter free delay relative to a start pulse and for generating such a delay over any practicable multiple of the time interval between timing pulses, such multiple including a non-integer, comprising:

delay means responsive to the start pulse and to the timing pulses for generating first and second signal edges, the second signal edge occurring later in time than the first signal edge, both signal edges occurring following the start pulse and in timed relation to the timing pulses; and

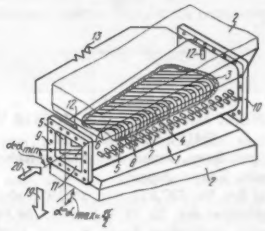
signal generating means connected to the delay means and having an output for generating an output signal which includes a timing cycle of a fixed known duration, the signal generating means being responsive to the start pulse for initiating the timing cycle, the first signal edge for interrupting the timing cycle for an indefinite period, and the second signal edge for reestablishing the timing cycle and permitting the timing cycle to continue, the output signal beginning in timed relation to the start pulse and terminating in timed relation to the end of the timing cycle following interruption, so that a virtually jitter free delay with respect to the start pulse is generated.

4,260,913

DUCT FOR MAGNETOHYDRODYNAMIC GENERATOR

Valentin A. Bitjurin, ulitsa Krupskoi, 3, kv. 16; Vladilen I. Maximenko, Posledny pereulok, 23, kv. 15, and Stanislav A. Medin, Leningradsky prospekt, 78, korpus 5, kv. 83, all of Moscow, U.S.S.R.

Filed Jul. 18, 1979, Ser. No. 58,792
Claims priority, application U.S.S.R., Jul. 18, 1978, 2645820
Int. Cl.³ H02K *45/00*
U.S. Cl. 310—11 **3 Claims**



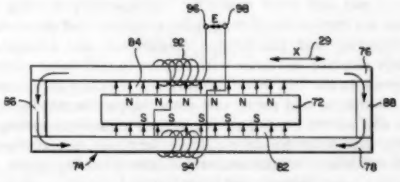
1. A duct for a magnetohydrodynamic generator having diagonally conductive walls, comprising extended modules of a suitable electrically conductive material, which are electrically insulated from one another and oriented so that each module has sections inclined at an angle α with respect to a longitudinal axis of said duct, said angle being varied within $\pi/2 \geqq \alpha_{max} \geqq \alpha \geqq \alpha_{min} \geqq 0$, said extended modules being C-shaped and oppositely disposed in an alternating manner so that the number of electrical breaks per unit length of said duct along its axis on walls formed with said sections of the modules inclined at said angle α_{max} with respect to said axis of duct exceeds twice the number of electrical breaks along its axis on walls formed with said sections of the modules inclined at said angle α_{min} with respect to said axis of the duct.

4,260,914

DIFFERENTIAL LINEAR VELOCITY TRANSDUCER

Friedrich R. Hertrich, Boulder, Colo., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Mar. 28, 1979, Ser. No. 24,605
Int. Cl.³ H02K *33/00*
U.S. Cl. 310—27 **2 Claims**



1. A linear velocity transducer for converting mechanical motion to an electrical signal, comprising, in combination:

a permanent magnet;

a pole piece assembly of magnetic material;

the pole piece assembly comprising:

(a) a first pole piece of magnetic material disposed opposite the north pole of the magnet and spaced apart therefrom;

(b) a second pole piece of magnetic material disposed oppo-

site the south pole of the magnet and spaced apart therefrom;

(c) a third pole piece of magnetic material connecting the first and second pole pieces, and

(d) a fourth pole piece of magnetic material connecting the first and second pole pieces, whereby the pole piece assembly provides a closed path for flux generated by the magnet and surrounds in part the magnet;

(e) a first coil wound around and slideable along the first pole piece;

(f) a second coil wound around and slideable along the second pole piece;

(g) the first and second coils being connected in series and oppositely wound with respect to the flux generated by the magnet, the output voltage of the transducer being the voltage produced across such series-connected coils.

4,260,915

PERMANENT MAGNET STEP MOTOR WITH A SHIFTABLE ROTOR

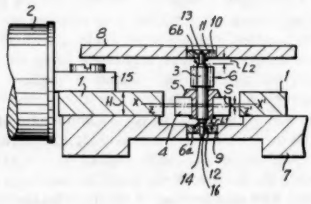
Kazuo Kawasumi, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation of Ser. No. 837,075, Sep. 28, 1977, abandoned. This application Jul. 20, 1979, Ser. No. 58,963

Claims priority, application Japan, Sep. 28, 1976, 51/130045

Int. Cl.³ H02K *37/00*

U.S. Cl. 310—49 R **4 Claims**



1. In a step motor for an electronic timepiece including a permanent magnet rotor, rotor support means for rotatably supporting said rotor, a magnetically permeable stator means surrounding said rotor and a drive coil coupled to said stator means, said drive coil being adapted to intermittently have a current applied thereto, said stator means being adapated in the absence of a current applied thereto to permit said rotor to remain substantially stationary, said stator means being further adapted in response to said current being intermittently applied to said drive coil to define a flux field between said stator means and said rotor means for incrementally rotating said rotor, the improvement comprising said rotor and stator means surrounding said rotor being constructed and arranged to axially displace said rotor with respect to said stator means in response to the flux field therebetween effecting an incremental rotation of said rotor, said rotor support means including first and second bearing means, a rotor pinion supporting the rotor, said rotor pinion including first and second trunions disposed in said respective first and second bearing means, said turnions being dimensioned to permit said trunions to be freely axially displaced in said bearing means, said rotor being positioned in a first axially displaceable position in the absence of a current applied to said drive coil and said attractive flux field between said stator means and rotor axially displacing said rotor to a second axial position when said attractive flux field effects an incremental rotation thereof so that the axial position of said rotor is determined solely by the attractive flux field between said stator means and said rotor when said current is applied to said drive coil.

4,260,916

ELECTRIC MOTOR DRIVEN HAND-HELD DRILL

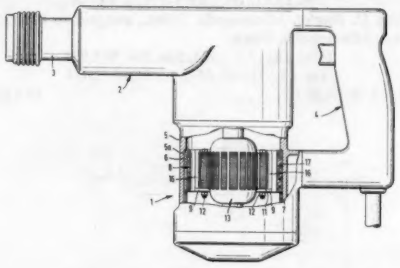
Werner Theissig, Munich, Fed. Rep. of Germany, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Aug. 21, 1979, Ser. No. 68,491

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1978, 2837254

Int. Cl.³ H02K *7/14*

U.S. Cl. 310—50 **7 Claims**



1. Hand-held drill including an electric motor for driving said drill, said motor including a stator having a central axis, a motor casing laterally enclosing said stator, a plastic layer located between the interior surface of said motor casing and said stator laterally encircling said stator and lining the interior surface of said motor casing laterally outward of said stator, wherein the improvement comprises that said motor casing has a plurality of openings extending therethrough from the interior to the exterior of said casing in the region located laterally outwardly from said stator, said plastic layer being interlocked with said motor casing in the openings therethrough, each of said openings being laterally defined by an annular surface extending between the interior surface and exterior surface of said motor casing, and said annular surfaces being in diverging relationship from the interior surface to the exterior surface of said motor casing.

4,260,917

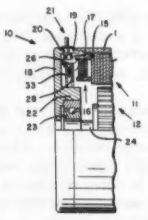
INTERCONNECTION FOR THE WINDINGS AND LEAD WIRES OF A MOTOR

Robert S. Lundin, Northfield, and Randal B. Hathway, Thomaston, both of Conn., assignors to The Superior Electric Company, Bristol, Conn.

Filed Jul. 13, 1978, Ser. No. 924,264

Int. Cl.² H02K *11/00*

U.S. Cl. 310—71 **11 Claims**



1. An electric motor having a stator that includes a stator stack that is axially elongate and formed to have a plurality of inwardly directed poles with one end of said stack being essentially planar, winding means for magnetizing the poles and having a plurality of winding ends and a plurality of insulated lead wires extending from the motor with each lead wire having a stripped end within the motor, the improvement

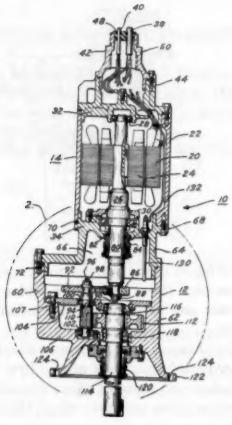
comprising a disc formed of electrically insulating material positioned adjacent the planar end of the stator and being formed to have a plurality of peripherally spaced, inwardly directed slots, each of the winding ends being positioned in its own selected slot to extend through the disc, means stapling each lead wire adjacent its stripped end onto the surface of the disc opposite the planar end of the stack, said stapling means positioning the stripped end of each lead wire adjacent a slot through which at least one winding end protrudes and means connecting each winding end to its adjacent stripped end including a plurality of turns of the winding end wrapped about the stripped end.

4,260,918

EXPLOSION PROOF SUBMERSIBLE GEARMOTOR

William B. Engle, Columbus, Ind., assignor to Reliance Electric Company, Columbus, Ind.

Filed Dec. 18, 1978, Ser. No. 970,813
Int. Cl.³ H02K *5/10*
U.S. Cl. 310—87 **11 Claims**



1. An explosion proof submersible gearmotor comprising a gear reducer having a housing with a sealed chamber therein, an input shaft, an output shaft, a reduction gear train in said chamber connecting said input shaft with said output shaft, a sealed electric motor having a housing mounted on said gear reducer housing in sealing relation therewith and having a shaft connected to said gear reducer input shaft, a wall separating said motor from said gear reducer and having an opening through which said input shaft extends, an electrical non-conducting lubricant in said chamber, and a moisture-sensing probe extending into the lubricant in said chamber for sensing the presence of water in said chamber and transmitting a signal in response thereto, indicating a failure in a seal of said gear reducer.

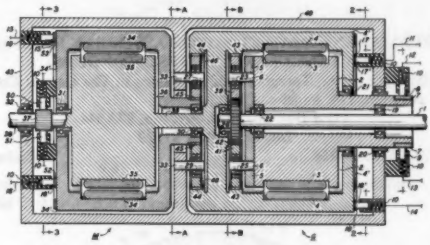
4,260,919

VARIABLE SPEED ELECTRIC MOTOR TRANSMISSION

John B. Fleming, 36 Woodlawn St., Rochester, N.Y. 14607

Filed Oct. 26, 1978, Ser. No. 955,139
Int. Cl.³ H02K *47/14*
U.S. Cl. 310—113 **2 Claims**

1. An electrical mechanical variable speed torque sensing transmission composed of a motor generator housing, an input shaft rotatably mounted within said housing, a first sun gear mounted near one end of said input shaft, a generator armature surrounding said shaft, a generator field surrounding said generator armature, a first set of planet gears mounted on stub shafts fixed to one end of said generator armature and cooperating with said first sun gear, a ring gear integral with one end of said generator field, a first side of said ring gear surroundingly cooperating with said first set of planet gears so that the generator armature and the generator field are both free to rotate about said input shaft within the housing, a second set of planet gears cooperating with the second side of said ring gear, the second set mounted on stub shafts fixed relative to the housing, a motor armature fixed at one end of the second side



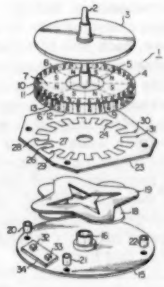
of said ring gear, a motor field surrounding said motor armature, a second sun gear fixed to one end of the motor field and cooperating with said second set of planet gears so that the motor field and motor armature are rotatable relative to said housing and each other, an output shaft fixed to the opposite end of the motor armature from the ring gear and rotatably supported in said housing, electric controls and circuits connecting said motor and generator for direct current operation.

4,260,920

MULTI-POLE PERMANENT MAGNET ROTOR

Tsutomu Nakamura, Toyokawa, and Teruo Umehara, Hanyu, both of Japan, assignors to Hitachi, Ltd. and Hitachi Metals, Ltd., both of, Japan

Filed Sep. 18, 1978, Ser. No. 943,124
Claims priority, application Japan, Sep. 19, 1977, 52/111646
Int. Cl.³ H02K *21/12*
U.S. Cl. 310—156 **9 Claims**



1. A motor comprising:

a disk-shaped rotor magnet attached to a rotary shaft;

a plurality of driving magnetic poles segmented circumferentially of said rotor magnet and magnetized in the direction of the thickness of said rotor magnet;

a plurality of velocity detecting magnetic poles segmented circumferentially of said rotor magnet concentrically to said driving magnetic poles and magnetized in the direction of the thickness of said rotor magnet, the number of magnetic poles of said velocity detecting magnetic poles being larger than the number of magnetic poles of said driving magnetic poles;

a yoke plate disposed to be spaced from and face said rotor magnet to define a magnetic gap between said rotor mag-

net and said yoke plate, said yoke plate rotatably supporting said rotary shaft;

a pair of driving coils disposed within said magnetic gap to interlink with magnetic fluxes of said driving magnetic poles of said rotor magnet; and

a velocity detecting coil disposed within said magnetic gap to interlink with magnetic fluxes of said velocity detecting magnetic poles of said rotor magnet.

4,260,921

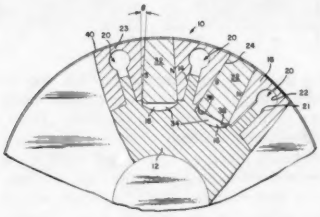
PERMANENT MAGNET ROTOR ASSEMBLY HAVING RECTANGULARLY SHAPED TONGUES

Alexander Silver, Tarzana, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Dec. 26, 1978, Ser. No. 973,344

Int. Cl.³ H02K *21/12*

U.S. Cl. 310—156 **8 Claims**



1. A permanent magnet rotor assembly comprising:

a hub having radially extending tongues of a uniform parallel sided cross-section equally spaced around the outer periphery of said hub;

a plurality of inwardly converging wedge-shaped support members radially disposed around the outer periphery of said hub, said support members each having an inwardly opening groove, each groove having an inner uniform parallel sided cross-section portion and an outer circular portion, the inner uniform parallel sided cross-section portion receiving and affixed to a corresponding uniform parallel sided cross-section radially extending tongue without the tongue extending into the outer circular portion of the groove, each pair of adjacent inwardly converging wedge-shaped support members forming an outwardly converging wedge-shaped opening therebetween;

a plurality of outwardly converging wedge-shaped permanent magnets, individual magnets disposed in individual outwardly converging wedge-shaped openings between said support members with a gap between said permanent magnets and the periphery of said hub;

during rotation of the rotor assembly the outwardly converging wedge-shape of said permanent magnets compressing said support members around the tongues radially extending from said hub.

4,260,922

INTEGRAL COLLECTOR PUMP FOR HIGH SPEED MACHINE

Burton D. Hatch, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 16, 1979, Ser. No. 58,220

Int. Cl.³ H02K *7/14*

U.S. Cl. 310—178 **12 Claims**

1. In an acyclic electrodynamic machine comprising:

a hollow shaft mounted for rotation about an axis;

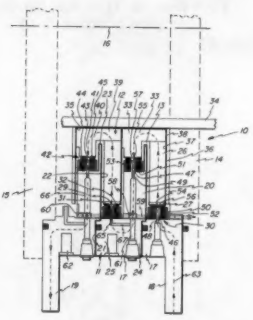
a plurality of annular electrically conductive rotor disks each mounted concentrically with said shaft and connected thereto by an electrically conductive rotor disk mounting ring;

a first annular electrically conductive rotor collector ring disposed about the radially-outer circumferential surface of each of said rotor disks;

a plurality of annular electrically conductive stator disks interleaved with said rotor disks; each of said stator disks being mounted circumferentially within one of a plurality of electrically conductive stator disk mounting rings and having a first stator collector disposed about the radially inner periphery of said stator disk;

each of said stator disk mounting rings having a second stator collector formed thereon axially adjacent said stator disk and disposed circumferentially around one of said first rotor collector rings;

each of said rotor disk mounting rings having an annular contact surface thereon extending in the axial direction adjacent said rotor disk, radially-inward of a first stator collector, and constituting a second rotor collector ring;



a first plurality of liquid metal current collectors mounted on one of said second stator collectors and each disposed radially adjacent and surrounding one of said first rotor collector rings;

a second plurality of liquid metal current collectors mounted about the inner periphery of one of said first stator collectors and each disposed radially adjacent and surrounding one of said second rotor collector rings; the improvement comprising:

means for supplying liquid metal to each of said current collectors to complete electrical connection between said rotor collector rings and said stator collectors, said means disposed in said stator such that interaction of armature current and field flux in said liquid metal produces an electromagnetic force upon said liquid metal in a generally circumferential direction.

4,260,923

POLE-AMPLITUDE MODULATION POLE-CHANGING ELECTRIC MOTORS AND GENERATORS

Gordon H. Rawcliffe, Clifton, England, assignor to National Research Development Corporation, Clifton, England

Filed Mar. 19, 1979, Ser. No. 21,771

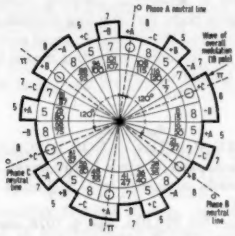
Claims priority, application United Kingdom, May 25, 1978, 22541/78

Int. Cl.³ H02K *3/00*

U.S. Cl. 310—184 **8 Claims**

1. A three-phase alternating current electric machine for alternative pole-number operation, having a symmetrical pole-amplitude modulation three-phase stator winding switched to provide the alternative pole-numbers, said pole-number switching being effected by including all coils of each phase-winding in a selected one of two phase-winding parts, said phase-winding parts being connected together alternatively in series and in parallel in order to provide said alternative pole-numbers, and the coils of the phase-windings being grouped to produce a modulation pattern waveform of approximately sinusoidal form with added third-harmonic modulation con-

tent, whereby the adjacent harmonic content of the m.m.f. waveform of the three-phase winding is less for both pole-numbers than for a modulation waveform of sinusoidal form without added third-harmonic modulation content.

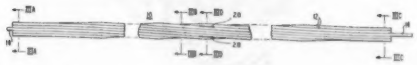


4,260,924

CONDUCTOR BAR FOR DYNAMOELECTRIC MACHINES

Robert Lugosi, Monroeville; George J. Fechko, Pittsburgh; Alan T. Male, Murrysville; Henry E. Haller, III, Pittsburgh, and Cecil J. Mole, Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 27, 1978, Ser. No. 945,985
Int. Cl.³ H02K *3/14*
U.S. Cl. 310—213 **5 Claims**



1. A conductor bar for a dynamoelectric machine comprising a plurality of subconductors, said subconductors being comprised of a pluarlity of insulated conducting strands disposed in a plurality of twisted bundles forming cables and a plurality of individual insulated conducting strands twisted with the cables and compressed into a fully transposed subconductor having a generally square cross-section, said subconductors being disposed in two side-by-side stacks and being transposed by cross overs between said stacks, said cross overs being formed by bending said subconductors at predetermined locations, and insulating strips disposed at the bend locations so as to separate the bent portion of the subconductors from the remainder of the conductor bar whereby the conductor bar is compressed at the bend locations to provide a more uniform dimensioned conductor bar free of strand-to-strand and subconductor-to-subconductor shorts.

4,260,925

STATOR FOR AN ELECTROMAGNETIC TRANSDUCER

Edward L. Barrett, 506 Malden Ave., LaGrange Park, Ill. 60525

Continuation of Ser. No. 716,589, Aug. 23, 1976, abandoned. This application Apr. 17, 1978, Ser. No. 896,687
Int. Cl.³ H02K *1/00*
U.S. Cl. 310—216 **11 Claims**

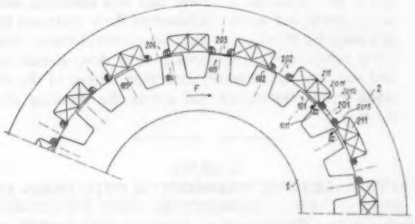
1. A stator body of magnetic material for an electromagnetic transducer, consisting essentially of an outer ring portion with a plurality of inwardly extending toothed elements, each of said toothed elements having a trunk portion connected at one end with said ring and a pair of spaced branch portions extending from an opposite end thereof, said branch portions terminating at inner ends thereof in an annular array, and including a stator winding having a first plurality of electrically conductive coils each encompassing an associated one of said trunk portions, and a second plurality of electrically conductive coils each encompassing an associated branch portion of one of said toothed elements and an associated branch portion of another of said toothed elements, said first and second pluralities of coils being electrically connected in series to alternate coils of said first and second pluralities.

4,260,926

VARIABLE RELUCTANCE ELECTRIC MOTOR WITH PROGRESSIVELY SATURABLE POLES

Jean Jarret, Paris, and Jacques Jarret, Louveciennes, both of France, assignors to Societe Elpalux, Luxembourg, Luxembourg

Continuation-in-part of Ser. No. 808,164, Jun. 20, 1977, abandoned. This application Mar. 16, 1979, Ser. No. 21,196
Int. Cl.³ H02P *7/06*
U.S. Cl. 310—254 **3 Claims**



1. A variable-reluctance electric driving motor of the kind comprising:

a rotor member made up of magnetic material laminations and having a plurality of teeth of uniform pitch projecting therefrom;

a stator member which defines a gap with said rotor member into which gap said rotor teeth project;

said stator member made up of magnetic material laminations and having a plurality of poles projecting therefrom and distributed in 4m sectors, m being equal at least to two, each sector including a plurality of p consecutive poles, said poles being two by two symmetrical with respect to the sector bisector and forming on each side of said bisector two pole arrangements of p/2 poles each, the pitch between the poles in each arrangement being equal to the rotor tooth pitch minus a small increment and the pitch between the poles of the two arrangements nearby the bisector being equal to the rotor tooth pitch plus $(p/2-1)$ times said increment;

the 4m sectors forming 4 groups of m sectors and the relative positions of the sectors of the first second, third and fourth sector group with respect to the rotor teeth being shifted by 1, 2, 3, 4 quarters of the tooth pitch respectively;

as many induction coils as sectors, each induction coil surrounding all of the poles of one sector; and

means for feeding the induction coils of the 4 sector groups with a phase of a four-phase current to obtain magnetic

saturation of each pole during the rotation of the rotor when at least a portion of a tooth is facing said pole.

4,260,927

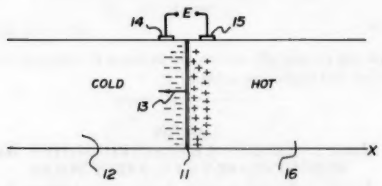
STANDING BOW SHOCK ELECTRICAL POWER GENERATOR

Boye Ahlborn, and Joe W. M. Kwan, both of Vancouver, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Continuation-in-part of Ser. No. 877,494, Feb. 13, 1978. This application Oct. 15, 1979, Ser. No. 84,588

Int. Cl.³ H02N *4/02*

U.S. Cl. 310—300 **12 Claims**



1. Apparatus for generating electrical power from a supersonic gas flow comprising:

means for establishing a standing shock wave having a potential gradient in the supersonic gas flow; and

first and second electrode means for extracting power from across said potential gradient, said first electrode means being positioned in the undisturbed flow upstream from said standing shock wave and said second electrode means being positioned in the shocked flow downstream from said standing shock wave, such that neither of the electrode means electrically cut across the standing shock wave.

4,260,928

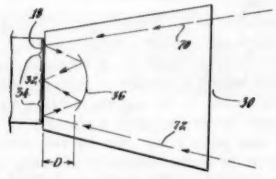
ELECTRO-ACOUSTIC TRANSDUCER WITH HORN AND REFLECTOR

Robert J. Salem, Danbury, Conn., assignor to General Electric Company, New York, N.Y.

Filed Nov. 9, 1978, Ser. No. 959,106

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—335 **12 Claims**



1. An improved electrical-acoustical transducer and horn arrangement comprising:

a. an electrical-acoustical transducer having a vibratory surface thereof and having a characteristic whereby electrical/acoustical transduction is accomplished relatively more efficiently over a limited segment of area of the vibratory surface than over other areas of the surface;

b. said transducer adapted to vibrate said surface at an ultrasonic frequency (f_c) responsive to an electrical signal applied thereto and to generate an electrical signal at a frequency (f_c) responsive to acoustical energy incident on said surface;

c. an elongated conically shaped horn body having a first aperture thereof;

d. means positioning said vibratory surface adjacent said first aperture; and e. acoustical coupling means positioned within the horn body for coupling acoustical energy between the horn and the limited segment area of the vibratory surface and including reflective means having a focal point in the limited segment area.

4,260,929

HIGH-PRESSURE SODIUM VAPOR DISCHARGE LAMP

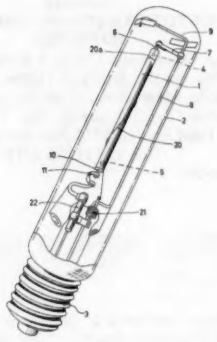
Cornelis A. J. Jacobs, and Marinus F. Brugmans, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 894,034, Apr. 6, 1978, abandoned. This application Jul. 9, 1979, Ser. No. 55,663

Claims priority, application Netherlands, Apr. 15, 1977, 7704131

Int. Cl.³ H01J *61/16, 61/20, 61/22*

U.S. Cl. 313—184 **4 Claims**



1. A high-pressure sodium vapor discharge lamp provided with a light transparent discharge tube and a pair of electrodes spaced within and sealed to said discharge tube, said tube containing sodium, mercury and xenon, the sodium vapor pressure in the operating condition of the lamp being between 100 and 200 torr, and the xenon pressure at 300 degrees Kelvin being between 50 and 1000 torr, and the weight ratio of the mercury to the sodium in the discharge tube being between 8 and 1.5.

4,260,930

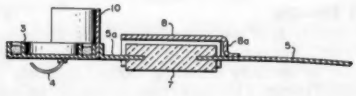
CATHODE RAY TUBE GETTER HAVING TWO ARMS CONNECTED TO FINAL ELECTRODE BY INSULATING CONNECTOR

Theo Hens, Mol, and Remi Wauters, Glabbeek, both of Belgium, assignors to GTE Sylvania, N.V., Tienen, Belgium

Filed Oct. 25, 1979, Ser. No. 88,329

Int. Cl.³ H01J *29/94, 31/00*

U.S. Cl. 313—481 **3 Claims**



1. A getter assembly for a cathode ray tube, said cathode ray tube comprising a funnel, a face plate and a neck and having a high electrical resistance layer on the inside surface of said funnel and an electron gun in said neck, said getter assembly comprising: a relatively long supporting arm having one end

attached to the final electrode of said electron gun and its other end fixed in an electrically insulating connector piece, said arm having a curvative substantially matching that of said funnel; a second arm fixed in the other end of said connector piece, said second arm carrying an annular getter; and a shield for said connector piece, said shield covering at least three sides of said connector piece and being attached at one end to said supporting arm, said getter being provided with a semi-circular upstanding shield facing said connector piece shield.

4,260,931

LOW-PRESSURE MERCURY VAPOR DISCHARGE LAMP WITH LUMINESCENT COATINGS ON ENVELOPE WALLS

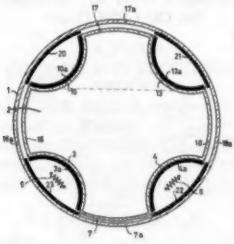
Gustaaf A. Wesselink; Hendrik Roelofs, and Cornelis H. M. Van Bommel, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 12, 1979, Ser. No. 11,470

Claims priority, application Netherlands, Feb. 14, 1978, 7801636; Dec. 27, 1978, 7812539

Int. Cl.³ H01J *61/35, 61/42*

U.S. Cl. 313—493 **10 Claims**



1. A low-pressure mercury vapor discharge lamp comprising a hollow inner member surrounded by an outer member, the wall of at least one of the members having one or more grooves, the intervening portions of that member located between the grooves extending to or near the wall of the other member, and a discharge space being formed wherein a discharge path folded by means of the grooves is present, the walls of the discharge space being substantially entirely coated with luminescent material, characterized in that said intervening portions located between the grooves face and extend parallel to the wall of the other member, these intervening portions and the adjacent portions of the other member located opposite to the intervening portions being free from luminescent material, said intervening portions being exposed to light from said discharge space which is substantially all visible light.

4,260,932

METHOD AND CIRCUIT FOR FACILITATING THE STARTING AND STEADY STATE FLICKERLESS OPERATION OF A DISCHARGE LAMP

Vance Johnson, 126 Quimby Ave., Trenton, N.J. 08610

Continuation-in-part of Ser. No. 757,673, Jan. 7, 1977, abandoned. This application Oct. 12, 1978, Ser. No. 950,765

Int. Cl.³ H05B *37/00, 39/00, 41/14*

U.S. Cl. 315—205 **11 Claims**

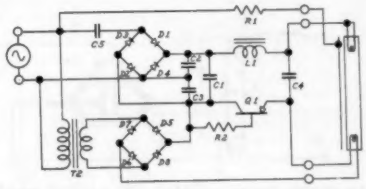
1. A circuit for improving the efficiency of energy consumption, extending lamp life, and facilitating the starting and steady-state flickerless operation of a discharge lamp normally utilizing a source of alternating current, comprising:

(a) a full-wave rectifier connected between both an input set of terminals and an output set of terminals, said input set of terminals comprising the AC line current supply and the output set of terminals comprising the positive and negative leads of the lamp;

(b) voltage-raising capacitance means disposed across the output of said rectifier;

(c) ballast means disposed between said AC line current supply and said rectifier whereby a substantial portion of the current provided by said circuit passes through said ballast means

(d) filtering capacitor means cooperating with said ballast means connected between the positive and negative output of said full-wave rectifier, wherein the output of said



voltage-raising capacitance is applied across said filtering capacitor, thereby providing a no-load voltage across said filtering capacitor means approximately equal to twice the peak input line voltage, said circuit comprising further a non-linear impedance stabilizing circuit coupled between said rectifier and said lamp having non-linearity characteristics opposing those of the discharge lamp for operating said lamp free of flicker by smoothing ripple in current through said lamp.

4,260,933

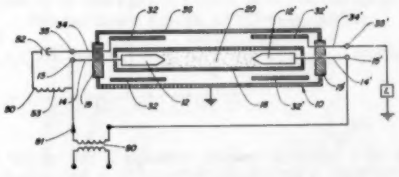
SELECTIVE FREQUENCY OPTICAL GENERATOR

Jerry Volland, P.O. Box 8061, Boise, Id. 83707

Filed Dec. 10, 1979, Ser. No. 102,244

Int. Cl.³ H01J *17/36*

U.S. Cl. 315—326 **4 Claims**



4. A tuned optical generator of an electrostatic field at light frequencies in electrical circuitry, said generator comprising:

a gaseous discharge tube including two spaced electrodes, an enclosing light permeable envelope and an ionizing gas contained therein;

a pair of absolute condenser plates, each plate adjacently spaced outwardly from one of said electrodes;

an electrically conductive casing surrounding said tube and spaced outwardly adjacent said absolute condenser plates;

a dielectric between said tube and said casing; and

a resonant frequency electrical circuit including resmod-type geometry means connected to at least one of said electrodes or its adjacent absolute condenser plate.

4,260,934

ELECTRIC DEVICE PROVIDED WITH A SWITCH WHICH IS DESIGNED AS A DISCHARGE TUBE

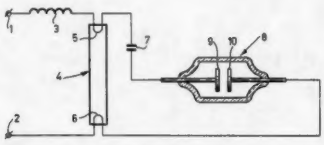
Gijsbert Kuus; Robertus L. C. de Vaan; Cornelis A. J. Jacobs, and Herman A. G. S. Smulders, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 29, 1977, Ser. No. 792,138

Claims priority, application Netherlands, May 5, 1976, 7604759

Int. Cl.[3] H01J *11/04;* **F04B** *37/02*

U.S. Cl. 315—326 **16 Claims**



1. An electric device provided with a switch which comprises a gas discharge tube which comprises at least two internal main electrodes, a reversible hydrogen getter disposed in said discharge tube, said getter releasing hydrogen when the temperature of the getter is increased and taking up hydrogen when the temperature is decreased, the magnitude of hydrogen pressure in said discharge tube at least partly determining the electrical conductivity of said switch, said discharge tube also containing a rare gas so that a change-over from the conducting state into the non-conducting state of the switch is accomplished by changing the getter temperature.

4,260,935

CIRCUIT ARRANGEMENT FOR SUPPRESSING CRT BEAM IN TELEVISION RECEIVER

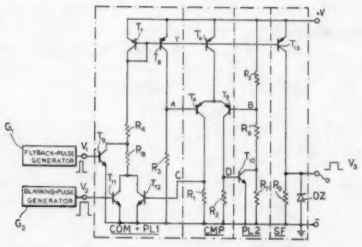
Antonio Colombo, Tradate, Italy, assignor to SGS Ates Componenti Elettronici S.p.A., Agrate Brianza, Italy

Filed Sep. 6, 1979, Ser. No. 73,088

Claims priority, application Italy, Sep. 7, 1978, 27399 A/78

Int. Cl.[3] H01J *29/52*

U.S. Cl. 315—381 **8 Claims**



1. In a television receiver including a cathode-ray tube whose beam is periodically deflected by a sawtooth-shaped scanning signal from a sweep circuit also generating a periodic blanking pulse fed to a circuit arrangement for suppressing said beam during a return stroke marked by the appearance of a flyback pulse of shorter duration than said blanking pulse,

the improvement wherein said circuit arrangement comprises:

normally deactivated comparison means provided with an activating input, a first signal input and a second signal input;

first biasing means connected to said first signal input for applying a switching signal thereto:

second biasing means connected to said second signal input for applying a reference siganl thereto:

control means with an input connection to said sweep circuit for receiving said blanking pulse therefrom and with an output connection to said activating input for establishing a first operational state of said comparison means in response to said blanking pulse, said comparison means being provided with a feedback connection to said control means for maintaining said first operational state independently of said blanking pulse:

switchover means connected to receive said flyback pulse and coupled to said first biasing means for modifying said switching singal to establish a second operational state of said comparison means in response to said flyback pulse with concurrnet disablement of said feedback connection whereby said comparison means is deactivated upon the disappearance of said blanking pulse; and

output circuitry connected to said control means for generating a beam-suppressing signal in both said first and second operational states thereof.

4,260,936

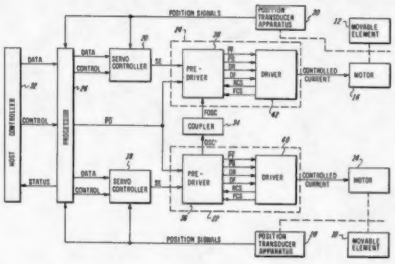
MASTER-SLAVE POWER AMPLIFIERS

Kai C. K. Sun, Saratoga, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 2, 1979, Ser. No. 63,637

Int. Cl.[3] G05B *11/28*

U.S. Cl. 318—66 **10 Claims**



1. Apparatus for controlling the current flow through first and second loads, comprising:

a first power amplifier connected to said first load and including first generating means for generating an oscillator signal having a predetermined frequency of oscillation, and first developing means responsive to said oscillator signal for developing a first control current through said first load;

a second power amplifier connected to said second load and including second developing means responsive to said oscillator signal for developing a second control current through said second load; and

means for coupling said oscillator signal from said first generating means to said second developing means.

4,260,937

SPEED SENSITIVE FIELD WEAKENING CONTROL FOR TRACTION MOTORS

David T. Cavil, Menomonee Falls, and William R. Krueger, Hartford, both of Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

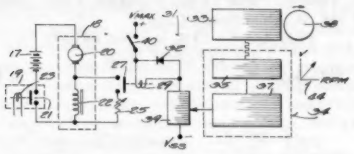
Filed May 16, 1977, Ser. No. 796,856

Int. Cl.[3] H02P *5/06*

U.S. Cl. 318—358 **14 Claims**

1. A control for a direct current motor including a field weakening solenoid switch including a solenoid coil, said control including electronic switching means connected in series with the coil for selectively connecting the coil to a source of direct current, speed sensor means adapted for pro-

viding an electronic digital signal having a frequency directly proportional to motor speed, and circuit means adapted for



receiving said digital signal and for providing an output signal for operating said electronic switching means.

4,260,938

CONTROL CIRCUITS FOR ELECTRICALLY DRIVEN VEHICLES

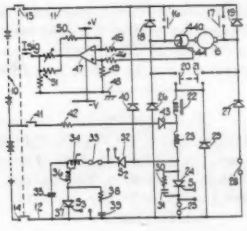
John F. Joyes, Solihull, England, assignor to Lucas Industries Limited, Birmingham, England

Continuation of Ser. No. 661,502, Feb. 26, 1976, abandoned. This application Feb. 23, 1978, Ser. No. 880,344

Claims priority, application United Kingdom, Feb. 28, 1975, 8364/75

Int. Cl.[2] H02P *7/28*

U.S. Cl. 318—434 **5 Claims**



1. A control circuit for the d.c. motor of an electrically driven vehicle, said circuit comprising a motor current demand signal generator for generating a current demand signal; a motor current transducer circuit means for generating a signal representative of actual current to the motor; a motor control circuit coupled to said transducer circuit means and to said current demand signal generator and responsive to outputs thereof for controlling motor current in said motor in accordance with error between said current demand signal and said signal representative of actual current; said demand signal generator including an operational amplifier having an inverting input terminal, a non-inverting terminal and an output terminal, a potentiometer having its slider moveable by an accelerator member operatively connected to said motor, said slider being electrically connected to said inverting input terminal of said operational amplifier, a capacitor having one terminal connected by a first resistor to said output terminal of said operational amplifier and by a second resistor to the base of a transistor as an emitter follower, the emitter of said transistor providing the current demand signal and being coupled via a feedback resistor to said inverting input terminal of the operational amplifier.

4,260,939

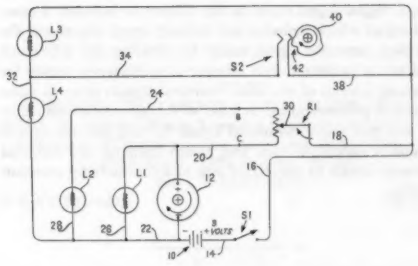
LOW COST ELECTROMECHANICAL ELECTRONIC SIMULATION CIRCUITS

Robert J. Knauff, 819 N. Gardner St., West Hollywood, Calif. 90046

Filed Aug. 7, 1978, Ser. No. 931,551

Int. Cl.[3] H04R *11/02*

U.S. Cl. 318—558 **35 Claims**



1. A circuit for producing effects in a model, which comprises:

a two-pole armature and commutator motor having an on-off switching effect and for producing motion of at least a portion of said model,

means for applying sufficient electromotive force through said commutator and to said armature for operation of said motor, and electrically connected to said motor in a commutator circuit,

and at least one effect-producing circuit element electrically connected to said commutator circuit,

the switching effect of said two-pole armature and commutator motor serving to produce pulsed modulation of the electromotive force supplied to said effect-producing circuit element to produce observable variation in effect thereby.

4,260,940

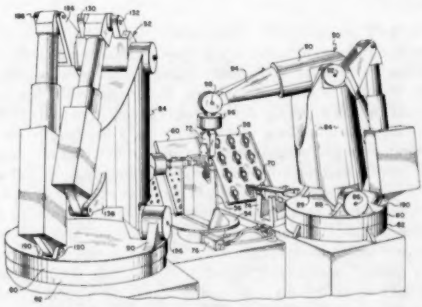
PROGRAMMABLE AUTOMATIC ASSEMBLY SYSTEM

Joseph F. Engelberger, Newtown; Torsten H. Lindbom, Brookfield; Maurice J. Dunne, Newtown; William Perzley, Weston; Wilbur N. Roberts, Newtown, and Horace L. Gardner, Ridgefield, all of Conn., assignors to Unimation, Inc., Danbury, Conn.

Division of Ser. No. 625,932, Oct. 28, 1975, Pat. No. 4,163,183. This application Apr. 18, 1979, Ser. No. 30,994

Int. Cl.[3] G05B *11/32*

U.S. Cl. 318—562 **32 Claims**



1. In a programmable manipulator, the combination of, a manipulator arm movable in a plurality of axes, memory stor-

age means having stored therein a plurality of digital command signals corresponding to the program step positions to which said arm is to be moved, at least one of said stored signals including a stored velocity mode signal, address means for causing said stored command signals to appear at the output of said memory means in a predetermined sequence, means operative in the absence of said velocity mode signal for moving said arm to the position represented by said stored command signals, means responsive to said velocity mode signal for developing a digital signal equal to the difference between a command signal which includes said velocity mode signal and the preceding command signal, means for dividing said difference signal into a predetermined number of increments, means for producing a series of artificial command signals equal in number to said predetermined number of increments which differ from said preceding command signal by said increments and are equally spaced in time, and means utilizing said artificial command signals to move said arm at a substantially constant velocity.

4,260,941

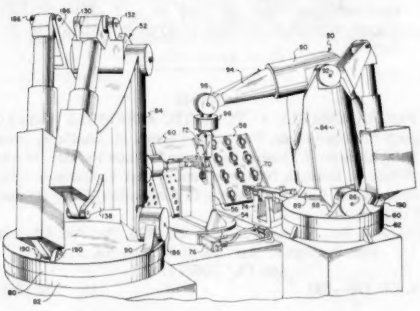
PROGRAMMABLE AUTOMATIC ASSEMBLY SYSTEM

Joseph F. Engelberger, Newtown; Torsten H. Lindbom, Brookfield; Maurice J. Dunne, Newtown; William Perzley, Weston; Wilbur N. Roberts, Newtown, and Horace L. Gardner, Ridgefield, all of Conn., assignors to Unimation, Inc., Danbury, Conn.

Division of Ser. No. 625,932, Oct. 28, 1975, Pat. No. 4,163,183. This application Apr. 19, 1979, Ser. No. 31,462

Int. Cl.³ G05B *11/32*

U.S. Cl. 318—562 **5 Claims**



1. In a programmable manipulator, the combination of, a manipulator arm movable along a predetermined path, encoder means for developing a digitally coded signal corresponding to the absolute position of said arm along said path, teaching control means including drive means connected to said arm for moving said arm along said path during a teaching mode of operation of said programmable manipulator, a register, means for storing said digitally coded signal in said register and updating said stored digitally coded signal as said arm is moved over said path by said teach control drive means during the teaching mode so that the position to which said arm is moved remains stored in said register during periods when said arm is not moved, and means including comparator means jointly responsive to the digitally coded signal developed by said encoder means and the digitally coded signal stored in said register for holding said arm at the position stored in said register during periods of said teaching mode when said arm is not moved by said teach control means.

4,260,942

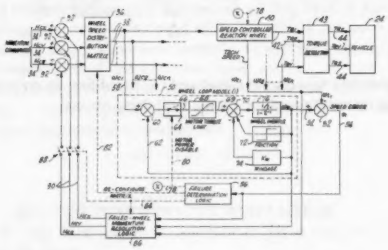
FAILURE DETECTION AND CORRECTION SYSTEM FOR REDUNDANT CONTROL ELEMENTS

Alan W. Fleming, Palos Verdes Peninsula, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Apr. 17, 1978, Ser. No. 897,072

Int. Cl.³ G05B *23/02*

U.S. Cl. 318—565 **31 Claims**



1. For use in a control system having a plurality of control elements of the type that may contribute control forces even after failure, at least one of the control elements being redundant, apparatus for detecting control element failure, said apparatus comprising:

control element modeling means, for simulating operation of the control elements and generating an estimated value of a performance parameter for each control element;

measuring means for obtaining an observed value of the performance parameter for each control element;

failure determination means for comparing said estimated performance parameter with said observed performance parameter and determining whether a control element failure has occurred; and

control means responsive to detection of a failure by said failure determination means, for deactivating the failed control element and for modifying said control element modeling means to take the failure into account.

4,260,943

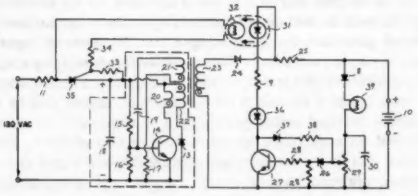
HIGH FREQUENCY BATTERY CHARGER

Andrew Zaderej, and George Zaderej, both of South Bend, Ind., assignors to Unitron Corporation, Elkhart, Ind.

Filed Jan. 30, 1979, Ser. No. 8,181

Int. Cl.³ H02J *7/10*

U.S. Cl. 320—21 **9 Claims**



1. A high frequency charger for a battery comprising means for rectifying an AC voltage power input into a DC voltage and including negative and positive output lines, means for converting said DC voltage into a high frequency AC voltage, said converting means constituting a blocking oscillator including

a filtering capacitor connected between said output lines, a high voltage and high frequency NPN transistor having its emitter connected to said negative output line, resistance means connected between said positive output line

and the base of said transistor for starting oscillation of the transistor, a main transformer winding connected between the collector of said transistor and said positive output line, a return transformer winding connected between said negative output line and through an impedence to the base of said transistor, an emf transistor winding in series with a fast recovery rectifier connected between said output lines, the anode of said rectifier facing said negative output line, said emf and main transformer windings being wound bifilar and of opposite polarity, said main and return transformer windings being of the same polarity, and a secondary transformer winding,

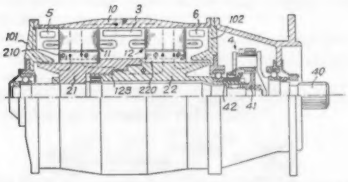
means for rectifying said high frequency AC voltage into a DC charging voltage for said battery, means for sensing the voltage of said battery during charging and in response to a selected sensed voltage reducing the charging current into said battery, said voltage sensing and current reducing means including control means for reducing said charging current upon actuation thereof, lambda diode means to sense the voltage of said battery and to turn off at said selected sensed voltage, a second NPN transistor means responsive to turn off of said lambda diode for actuating said control means, and said control means including an emitter device and an operatively coupled receiver device, SCR means for terminating said charging current upon switch off thereof, said receiver device associated with the gate of said SCR means and serving as means for switching said SCR means on during emitter device turn on and off during emitter device turn off, said second transistor means associated wth said emitter device for turning the emitter device on when said lambda diode is on and for turning the emitter device off when said lambda diode is off.

4,260,944

PULSATING SIGNAL GENERATOR FOR THE PRODUCTION OF POLYPHASE VOLTAGES OF INTERFERENCE

Gerard O'Mahony, 95 rue de Versailles, 92410 Ville d'Avray, France

Filed Apr. 27, 1979, Ser. No. 33,955
Claims priority, application France, Apr. 28, 1978, 78 12836
Int. Cl.³ H02K *39/00*
U.S. Cl. 322—48 **12 Claims**



1. A pulsating signal operator for the production of n systems of polyphase voltages at n phases, where the resulting pseudo-sinusoidal voltages from each of the n systems are modulated in amplitude to a predetermined, fixed or variable, pulsation ϵ, and staggered between themselves by $(2\pi/n)$, the generator comprising a double rotating homopolar including:

(a) a magnetic stator circuit provided with two armatures, each armature including a system of polyphase windings with n independent circuits per phase, each circuit of each phase of the first armature being connected in series with one of the circuits of a phase of the second armature in such a way that the circuits of the second armature connected in series with the circuits of a same phase of the first armature all belong to different phases, determined by circular permutations;

(b) a rotor with a rotatable magnet separated into two half-rotors by an airgap;

(c) an excitation coil concentric with the axis of the rotor for inducing a magnetic flux in the two armatures; and,

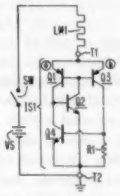
(d) means for driving the two half-rotors at speeds ω_1 and ω_2, different one from the other and such that the half-difference of the speeds $(\omega_1 - \omega_2/2)$ is equal to the pulsation ϵ.

4,260,945

REGULATED CURRENT SOURCE CIRCUITS

Adel A. A. Ahmed, Clinton Township, Hunterdon County, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 6, 1979, Ser. No. 27,735
Int. Cl.³ G05F *1/56*
U.S. Cl. 323—316 **19 Claims**



1. A regulated current source comprising:

first and second terminals for an operating voltage therebetween;

first and second transistors of complementary conductivity types, each having respective input and output and common electrodes and having a respective principal current conduction path between its common and output electrodes, the conductivity of its principal current conduction path being controlled by the potential appearing between its common and input electrodes;

means connecting said first and second transistors as respective amplifier means in a regenerative feedback loop tending to increase the conduction of their respective principal current conduction paths, including

first current conductive means between said first terminal and the common electrode of said first transistor, including

second current conductive means between said second terminals and the common electrode of said second transistor, including

means direct coupling the output electrode of said first transistor to the input electrode of said second transistor, and including

means direct coupling the output electrode of said second transistor to the input electrode of said first transistor;

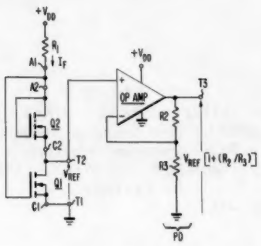
non-linear amplifier means having an input circuit connected for sensing the level of conduction in the principal current conduction path of said first transistor, having an output circuit connected between the common and input electrodes of said second transistor for completing a degenerative feedback loop, and exhibiting gain between its input and output circuits tending to increase with increasing sensed level of conduction, sufficiently to reduce the open-loop gain of said degenerative feedback loop to unity and thereby stabilize the level of current flowing through the principal current conduction path of said first transistor; and

means for supplying an output current proportional to that level of current.

4,260,946
REFERENCE VOLTAGE CIRCUIT USING NESTED DIODE MEANS

Carl F. Wheatley, Jr., Somerset, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 22, 1979, Ser. No. 22,840
Int. Cl.[3] G05F 3/20
U.S. Cl. 323—314 8 Claims



1. A reference voltage circuit of the type comprising:

first diode means having first and second electrodes between which substantially unidirectional current conduction characteristics are exhibited above a first offset potential;

a transistor being included within said first diode means, having input and common electrodes respectively connected with the first electrode of said first diode means and with its second electrode, and having an output electrode, said transistor including a semiconductive material;

second diode means being included within said first diode means, said second diode means having first and second electrodes between which substantially unidirectional current conduction characteristics are exhibited above a second offset potential smaller than said first offset potential, said second diode means being operated at substantially the same operating temperature as said first diode means and having its first and second electrodes respectively connected to the first electrode of said first diode means and to the output electrode of said transistor, said second diode means including the same said semiconductive material;

means for applying a bias current between the first and second electrodes of said first diode means; and

first and second terminals at the second electrode of said first diode means and at the second electrode of said second diode means, respectively, between which a reference voltage appears responsive to said bias current being applied, said reference voltage circuit being improved in that, in order to provide a constant reference voltage of predetermined value independent of variation in said bias current and said operating temperaturc, said first and second diode means are selected to be of types exhibiting substantially the same change in current conduction for equal increments of change in the voltage between their first and second electrodes from their respective offset potentials.

4,260,947
PHASE CONTROL CIRCUIT FOR REGULATING POWER

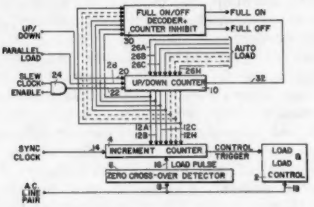
David T. Massey, 3742 W. Shangri-La Rd., Phoenix, Ariz. 85029

Filed Oct. 11, 1977, Ser. No. 840,743
Int. Cl.[3] G05F 1/455
U.S. Cl. 323—322 17 Claims

1. A digital circuit for generating a trigger pulse in response to zero crossover points of an applied AC signal, said trigger pulse occurring at any desired point between adjacent zero crossover points, comprising:

first digital counting means responsive to said zero crossover points for generating said trigger pulse when said first digital counting means has counted up to a predetermined state;

receiving means directly connected to said AC signal for generating therefrom load pulses at said zero crossover points and at least one DC signal which is a supply voltage for the remainder of said digital circuit, said load pulses being applied to said first digital counting means;



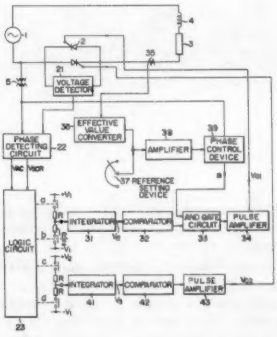
digital means for varying the time it takes said first digital counting means to reach said predetermined state, said digital means for varying comprising an up/down digital counter having a plurality of parallel outputs coupled to said first digital counting means for loading the contents of said up/down counter into said first digital counting means at the occurrence of said load pulse; and

control means for automatically increasing and decreasing the contents of said up/down digital counter.

4,260,948
METHOD AND APPARATUS FOR CONTROLLING ELECTRIC VALVES IN AC POWER SUPPLY

Chihiro Okado, Fuchu, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Feb. 23, 1979, Ser. No. 14,475
Claims priority, application Japan, Feb. 28, 1978, 53-22579; Feb. 28, 1978, 53-22580
Int. Cl.[3] G05F 1/44
U.S. Cl. 323—241 4 Claims



1. A method for controlling AC power supplied from an AC power source to a load having a substantial amount of inductance through electric valve means, said method comprising the steps of calculating a limiting value α_L of a phase angle for igniting the electric valve means in a specific cycle of power source voltage from the following equation based on the power source voltage and a turn-off period of the electric valves in an immediately preceding cycle of said specific cycle, and limiting an actual phase angle for controlling the electric valves in said specific cycle to said limiting value α_L:

$$\alpha_L = \theta_1 - (1/n)t_1$$

wherein θ_1 and t_1 represent an ignition phase angle and a turn-off period respectively of said electric valve means in said immediately preceding cycle, and n is a positive integer equal to or less than 2.

4,260,949

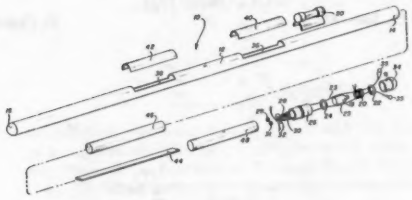
MAGNETIC FIELD DETECTION APPARATUS

Murphy L. Dalton, Jr., 6035 Aberdeen, Dallas, Tex. 75230

Continuation-in-part of Ser. No. 856,013, Dec. 22, 1977, Pat. No. 4,126,823. This application Jun. 12, 1978, Ser. No. 905,480

Int. Cl.[2] G01R *33/08*

U.S. Cl. 324—302 **14 Claims**



1. In a magnetic field detector having a pair of magnetically polarizable liquid bodies carried in spaced-apart relation, each having a magnetic probing coil wound therearound, with means connecting the coils in series and including timer means alternately applying current to the coils to polarize the liquid bodies to generate free precession signals therein and removing the polarizing current during a preset listening interval intervening polarizing intervals, the combination which comprises:

(a) a high gain signal channel tuned to the frequency of said free precession signals generated in said coils for amplifying a signal that is the sum of said free precession signals,

(b) means to rectify said sum signal at a selected bias level to produce an output signal which reduces to zero as said free precession signals decay,

(c) means having a mechanical movement operable to follow low frequency beat signals in the output signal from said rectifying means,

(d) means producing an aural signal to follow low frequency beat signals from bandpass amplifier output immediately preceding said rectifying means, and

(e) means producing constant magnetic field gradient bias signals through a magnetic field coil.

4,260,950

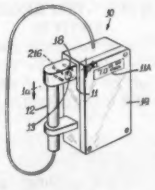
AUTOMATIC PORTABLE PH METER AND METHOD WITH CALIBRATION RECEPTACLE

David M. Hadden, Los Altos, and Eric S. Micko, Los Altos Hills, both of Calif., assignors to Delphian Corporation, Sunnyvale, Calif.

Filed Jul. 5, 1979, Ser. No. 54,688

Int. Cl.[3] G01N *27/42*

U.S. Cl. 324—438 **8 Claims**



1. A portable pH meter comprising,

an electrode probe comprising a pH electrode and a reference electrode for measuring hydrogen ion electrochemical potential of a liquid,

means for measuring the temperature at the reference and pH electrodes,

a calibration receptacle adapted to receive the electrode probe, and for containing pH buffer calibration solution of predetermined pH,

probe detecting means for determining the positioning of said electrode probe in said calibration receptacle,

calibration means activated by said probe detecting means, for calibrating the electrochemical potential measured by said probe while positioned in said calibration receptacle to a predetermined pH value corresponding to said predetermined calibration buffer pH, and

temperature compensation means for compensating the electrochemical potential measured by said probe in respect of the temperature measured by said temperature measurement means.

4,260,951

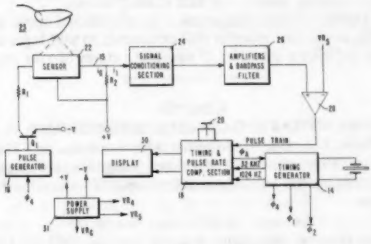
MEASUREMENT SYSTEM HAVING POLE ZERO CANCELLATION

Lanny L. Lewyn, Laguna Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 29, 1979, Ser. No. 6,983

Int. Cl.[3] H03K *5/00*

U.S. Cl. 328—165 **6 Claims**



1. A pulse rate measuring system for receiving during sample pulse intervals, a pulsed photocurrent signal including an ambient light and a reflected light carrier signal which is amplitude modulated by a heart blood pressure signal comprising:

signal processing means responsive to said pulsed photocurrent signal and including a second order loop having a first differentiator means providing a transfer function having a high pass pole at a first frequency,

cancellation means for forming a zero at said first frequency to cancel the high pass pole of said transfer function; and

second differentiator means coupled to said cancellation means for forming a high pass pole at a second frequency, and

additional pulse-shaping and output means coupled to said second differentiator means.

4,260,952

CIRCUIT FOR DECODING A DIPHASE SIGNAL

James W. Thomas, Jr., Valparaiso, Ind., assignor to Teletype Corporation, Skokie, Ill.

Filed Jul. 17, 1979, Ser. No. 58,240

Int. Cl.[3] H03K *9/00*

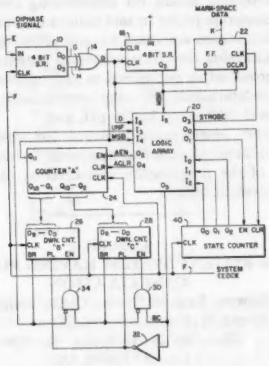
U.S. Cl. 329—104 **2 Claims**

1. Apparatus for decoding diphase input signals E having base bit intervals delineated by spaced diphase clocking signals and first and second data information occurring between the clocking signals, said clocking signals having a relatively wide input speed range comprising:

means **(24)** for measuring the time durations of said base bit intervals,

means for defining time periods which correspond to and are immediately subsequent to the measured time intervals, each time period being of less duration than the corresponding time interval,

means (**22**) for sensing said data information of said input signal during said time periods and for generating corresponding output signals,



control means (**20,40**) for controlling said measuring means, said defining means and said sensing means,

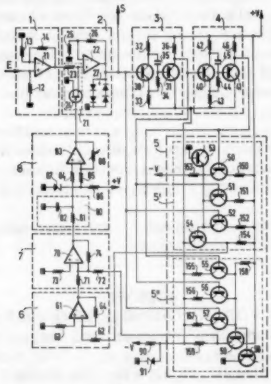
said control means comprises a combinational logic array (**20**), and a state counter (**40**) connected to said logic array for defining a plurality of operating states of said array.

4,260,953

AUTOMATIC GAIN CONTROL CIRCUIT

Jean-Pierre Touzard, St. Maurice Moncouronne, and Hubert Georget, Vincennes, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Apr. 10, 1979, Ser. No. 28,789
Claims priority, application France, Apr. 24, 1978, 78 12029
Int. Cl.³ H03G *3/30*
U.S. Cl. 330—279 **7 Claims**



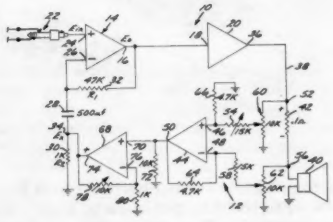
1. An automatic gain control circuit which includes a variable gain amplifier circuit for restoring an input signal of variable level which is to be regulated throughout the whole frequency band of the input signal, and a gain control loop in which the amplitude variations of the output signal of the variable gain amplifier circuit generate a DC gain control signal, said circuit being characterized in that said gain control loop includes n phase shifters wherein n is a whole number greater than 1, each of said phase shifters causing a defined low-frequency phase shift of the frequency band from the input signal to the output signal of said variable gain amplifier and a rectifier and summing circuit connected to the outputs of said variable gain amplifier circuit and of each of said n phase shifters, said rectifier and summing circuit delivering said gain control signal.

4,260,954

AMPLIFIER LOAD CORRECTION SYSTEM

Robert C. Crooks, Huntington Beach, Calif., assignor to Barcus-Berry, Inc., Huntington Beach, Calif.

Filed Jan. 26, 1979, Ser. No. 6,735
Int. Cl.³ H03F *1/34*
U.S. Cl. 330—85 **13 Claims**



1. A load correction system for program amplifier means having a program input and having a program output connected to a reactive load, which comprises:

differential amplifier means in said program amplifier means having a program voltage signal input connected to a source of a program voltage signal that is variable as to wave form and a feedback voltage signal input,

sensing means associated with said load and having a pair of outputs for providing a differential voltage signal that varies substantially in accordance with variations in load current,

a differential operational amplifier having non-inverting and inverting inputs and an output,

electrical connections between said outputs of said sensing means and the respective said differential operational amplifier inputs, and

electrical connection means between said output of said differential operational amplifier and said feedback voltage signal input,

said differential operational amplifier providing a continuously variable corrective feedback signal to said differential amplifier means for continuously instantaneously adjusting the gain of said program amplifier means in response to deviations of the wave form and phase of the feedback signal from the wave form and phase of the program signal so as to compensate for load current deviations in wave form and phase from the program.

4,260,955

CURRENT AMPLIFIER WITH REGENERATIVE LATCH SWITCH

Adel A. A. Ahmed, Clinton Township, Hunterdon County, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 12, 1979, Ser. No. 57,107
Int. Cl.³ H03F *3/04*
U.S. Cl. 330—288 **9 Claims**

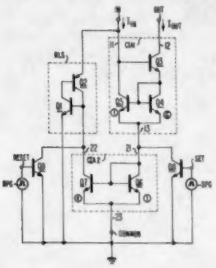
1. A switched current amplifier comprising:

input, output and common terminals;

a first component current amplifier having an input circuit connected between said input and common terminals, having an output circuit between said common and output terminals, and exhibiting current gain between its input

and output circuits so long as the potential across its input circuit exceeds a threshold value;

a regenerative latch switch means responsive to application of SET signals for selectively providing continuing condition between said input and common terminals to reduce



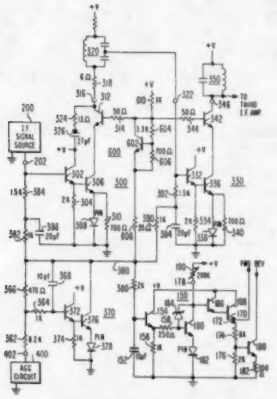
the potential across the input circuit of said first component current amplifier below said threshold value, and responsive to applications of RESET signals for selectively providing continuing non-conduction between said input and common terminals.

4,260,956

TEMPERATURE COMPENSATING BIAS CIRCUIT

Jack R. Harford, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 16, 1979, Ser. No. 21,322
Int. Cl.[3] H03F *3/04*
U.S. Cl. 330—289 **15 Claims**



1. Apparatus for compensating the gain of a transistor, including a base-to-emitter junction, against gain variation due to temperature changes comprising:

a source of operating potential having first and second terminals; and

a temperature compensating bias circuit, serially coupled between said first and second terminals, comprising:

first means, having a first terminal coupled to said first source terminal, and a second terminal, for conducting current, and exhibiting a base-to-emitter semiconductor junction voltage drop between its first and second terminals which varies with temperature changes;

second means, having a first terminal coupled to the second terminal of said first means, and a second terminal, for conducting current, and exhibiting a voltage drop which is a constant multiple of said base-to-emitter semiconductor junction voltage drop of said first current conducting means;

third means, coupled between the second terminal of said second means and said second source terminal, for conducting current, and exhibiting an impedance which is substantially constant with changes in temperature; and

means for coupling the base-to-emitter junction of said transistor in parallel with said first means,

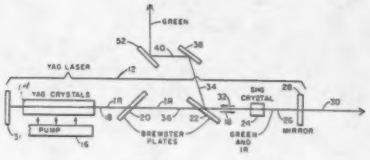
wherein the current conducted by said first means is replicated by said transistor in a substantially constant proportionate relationship so that the current conducted by said transistor is increased with increasing temperature, whereby the gain of said transistor is stabilized in the presence of temperature changes.

4,260,957

USE OF MULTIPLE BEAMS FROM FREQUENCY AUGMENTED LASER RADIATION

Robert S. Congleton, and Edmond B. Treacy, both of Richland, Wash., assignors to Jersey Nuclear-Avco Isotopes, Inc., Bellevue, Wash.

Filed Dec. 20, 1977, Ser. No. 862,410
Int. Cl.[2] H01S *3/10*
U.S. Cl. 331—94.5 N **28 Claims**



1. A system for deriving multiple beams of output radiation from a frequency converting element comprising:

means for generating radiation of a first frequency;

a frequency shifting element responsive to said radiation for providing a shift in the frequency thereof;

means for applying the radiation of said first frequency through said frequency shifting element in a plurality of distinct directions to produce a corresponding plurality of beams of frequency shifted radiation;

first means responsive to a first one of said plurality of frequency shifted beams for applying it to a region for excitation;

second means responsive to a second one of said plurality of frequency shifted beams of radiation for applying that radiation to a region for excitation.

4,260,958

APPARATUS AND METHOD FOR DEPOSITION OF ELECTRICAL POWER IN AN ELECTRIC DISCHARGE LASER

Robert J. Wayne, Glastonbury; Lanny M. Laughman, Bolton; Peter P. Chenausky, Avon, and Carl J. Buczek, Manchester, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

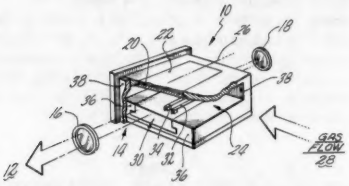
Filed Oct. 30, 1978, Ser. No. 955,991
Int. Cl.[3] H01S *3/097*
U.S. Cl. 331—94.5 PE **16 Claims**

1. Apparatus for providing, in response to electric potential signals applied thereto from one or more sources of electrical signals, the deposition of electrical power into a lasing gas mixture flowing through the discharge region of the optical cavity of an electric discharge laser system, comprising:

an anode having a substantially planar configuration, one major surface of which defines one side of the lasing gas flow path through the discharge region; and

a cathode, including a planar mounting structure having a major surface which is parallel to and in spaced relation

with said anode major surface for defining an opposite side of the lasing gas flow path through the discharge region, said cathode further including one or more cathode elements comprised of a thoriated material, each disposed on said mounting structure major surface in a transverse relation to the gas flow path and in parallel



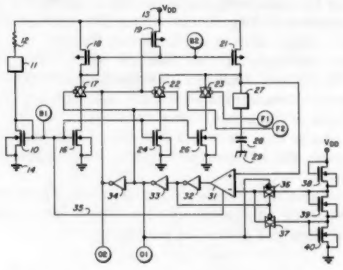
registration with said anode major surface, said cathode elements each connected for response to one polarity of the electrical potential signals applied thereto, an opposite polarity of which is presented to said anode, whereby said cathode elements in combination with said anode provide the deposition of electrical power into the lasing gas mixture flowing therebetween.

4,260,959

FET RELAXATION OSCILLATOR WITH REDUCED SENSITIVITY TO SUPPLY VOLTAGE AND THRESHOLD VARIATIONS

Robert N. Allgood, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 16, 1979, Ser. No. 58,218
Int. Cl.³ H03K *3/023*
U.S. Cl. 331—111 **14 Claims**



14. A CMOS oscillator providing an output frequency which is substantially independent of voltage variations and having a comparator having a first and a second input, the first input being for coupling to a capacitor and the second input being for coupling to a voltage reference, and three series connected N-channel transistors providing a first and a second voltage, the first and second voltages being controllably coupled to the second input of the comparator, and one of the three transistors being larger in physical size than the other two transistors.

4,260,960

OSCILLATOR CIRCUIT

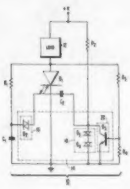
Robert H. Isham, Wilkes Barre, Pa., and Cesare J. Petrizio, Flanders, N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 11, 1979, Ser. No. 38,211
Int. Cl.³ H03K *3/35*
U.S. Cl. 331—111 **6 Claims**

1. A catheter, comprising:

an elongated shaft having a main lumen, an inflation lumen extending along the shaft, and an outer surface;

an annular sleeve of elastic material joined to the shaft in spaced first and second circumferential zones defining a cavity intermediate said sleeve and shaft, said inflation lumen communicating with the cavity to inflate said sleeve, and said sleeve having an inner surface facing toward a region of said outer surface of the shaft underlying the sleeve, with said surface region of the shaft being substantially smooth; and



said sleeve having a plurality of inner spaced circumferential ridges having inner surfaces facing toward the outer surface region of the shaft, said ridges defining a plurality of circumferential recesses having surfaces intermediate the ridge inner surfaces, with the inner surfaces of said ridges contacting the outer surface region of the shaft until use of the catheter, and said ridges having a sufficient width relative to the width of the recesses to prevent contact of the recess surfaces with the outer surface region of the shaft when the ridge inner surfaces contact the outer surface region of the shaft.

4,260,961

COMPENSATOR FOR TWO ANGULARLY OFFSET JOINED WAVE GUIDES

Konstantinos Beis, Backnang, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 27, 1978, Ser. No. 973,615
Claims priority, application Fed. Rep. of Germany, Jan. 4, 1978, 2800266; Jan. 4, 1978, 7800177[U]
Int. Cl.³ H01P *1/165, 5/00*
U.S. Cl. 333—21 A **8 Claims**

1. In a compensating arrangement for two aligned, angularly relatively offset wave guides positioned end-to-end in a junction zone; said wave guides having identical cross-sectional areas each having a major transverse axis and a minor transverse axis; each wave guide having a terminal flange; said terminal flanges of the respective wave guides being arranged face-to-face in said junction zone; the compensating arrangement including a reactance means situated in said junction zone for a broad-band compensation for the discontinuity between the angularly offset wave guides; the improvement wherein said compensating arrangement comprises a plate member inserted between said flanges; said plate member having

(a) an aperture having a shape corresponding to the outline of an overlapping portion of the cross-sectional areas of the two angularly relatively offset wave guides;

(b) two oppositely located capacitive loads extending into said aperture and being symmetrically located with re-

spect to the bisector of the angle defined by the minor transverse axes of said wave guides; said capacitive loads constituting said reactance means; and

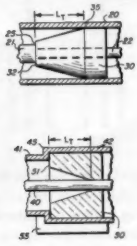
(c) a positive guiding means for maintaining said capacitive loads on said bisector independently from the twist angle between said wave guides.

4,260,962

RF TERMINATION FOR COAXIAL TRANSMISSION LINES

Michael Dydyk, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 6, 1979, Ser. No. 64,457
Int. Cl.³ H01P 1/26
U.S. Cl. 333—22 R **10 Claims**



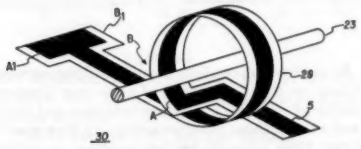
1. An RF termination for use with a coaxial transmission line having an inner conductor and an outer conductor, said termination comprising absorptive material positioned in the coaxial transmission line between the inner and outer conductors, one of the inner and outer conductors having a step change in the radius thereof with said absorptive material commencing at the step change and increasing in amount to an area spaced longitudinally from said step change where the absorptive material extends from the inner to the outer conductor, and the amount of absorptive material at the step change being sufficient to provide a characteristic impedance at the step change which is substantially equal to the characteristic impedance of the coaxial transmission line prior to the step change.

4,260,963

4:1 BALUN

Michael J. Drapac, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 18, 1979, Ser. No. 86,205
Int. Cl.³ H01P 5/10
U.S. Cl. 333—26 **8 Claims**



1. A balun comprising:

a flexible dielectric having a shape to facilitate forming a loop;

a first flexible conductor having a predetermined length L, an A terminal and an A1 terminal mounted to one surface of the flexible dielectric;

a second flexible conductor of the predetermined length L, a B terminal on one end and a B1 terminal on the other end mounted on the opposite surface of the flexible dielectric; and

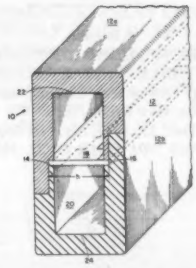
the first conductor, the second conductor and the flexible dielectric being configured into a loop, and the A1 terminal of the first conductor being in electrical contact with the B terminal of the second conductor creating a balun thereby having a high impedence terminal at the A terminal and low impedence terminal at the B1 terminal.

4,260,964

PRINTED CIRCUIT WAVEGUIDE TO MICROSTRIP TRANSITION

David L. Saul, El Cajon, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 7, 1979, Ser. No. 36,911
Int. Cl.³ H01P 5/107, 1/162
U.S. Cl. 533—26 **12 Claims**



1. A waveguide to microstrip transition apparatus comprising:

a waveguide having first and second narrow walls and first and second broad walls;

a dielectric substrate mounted within said waveguide and having a top surface and a bottom surface;

a stepped transformer section disposed on said dielectric substrate top and bottom surfaces;

a linear taper crossover section connected to said stepped transformer section and including a first conductor section including a first conductor edge disposed on said dielectric substrate top surface and a second conductor section including a second conductor edge disposed on said dielectric substrate bottom surface, said first conductor edge crossing over said second conductor edge in scissors-like manner;

a microstrip line conductor connected to said linear taper crossover section and disposed on said dielectric substrate top surface; and

a ground plane conductor disposed on said dielectric substrate bottom surface and connected to said linear taper crossover section.

4,260,965

FIXED MICROWAVE ATTENUATOR HAVING MOUNTING HOLE PASSING THROUGH ALUMINA PORCELAIN SUBSTRATE

Kiichi Nakamura, Yachiyo, and Takashi Iwata, Shonan, both of Japan, assignors to TDK Electronics Co., Inc., Tokyo, Japan

Filed Jul. 5, 1979, Ser. No. 54,798
Claims priority, application Japan, Jul. 20, 1978, 53/99877
Int. Cl.³ H01P 1/22, 1/30
U.S. Cl. 333—81 A **3 Claims**

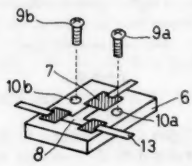
1. A fixed attenuator for use with a microwave band comprising:

a dielectric substrate of an alumina porcelain material;

at least one resistive film disposed on a surface of the substrate;

at least one conductive film disposed on the surface of said substrate so as to form an attenuating circuit of one of a

T-shape and π-shape with said at least one resistive film; and



at least one hole passing through said substrate at a position displaced from said attenuating circuit for securing said attenuator on a metallic layer.

4,260,966

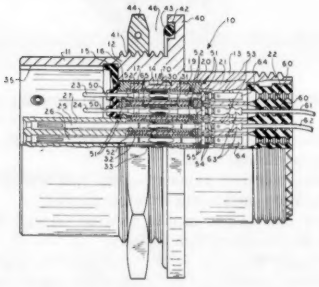
HIGH CURRENT FILTER CONNECTOR WITH REMOVABLE CONTACT MEMBERS

Kamal S. Boutros, Downsview, Canada, assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Dec. 23, 1977, Ser. No. 863,774

Int. Cl.[3] H03H *7/01;* **H01R** *19/22, 19/42, 19/46*

U.S. Cl. 333—182 **25 Claims**



1. A filter connector comprising:

an outer shell formed from conductive material;

an inner body including at least one channel therethrough;

a filter network within said one channel comprising a plurality of axially aligned and contiguous tubular filter elements, an inner conductive coating on the interior surface of at least one of said tubular filter elements, and an outer conductive coating covering an outer surface portion of at least one of said tubular filter elements;

a ground plate electrically coupled to said shell and also fixed to and electrically coupled to said outer conductive coating with the width of said ground plate taken parallel to the axes of said filter elements being of a magnitude at least as great as the axial length of any one of said tubular filter elements, said ground plate dissipating heat generated by high RF currents associated with said connector; and

a contact member within said filter network electrically coupled to said inner conductive coating.

4,260,967

HIGH POWER WAVEGUIDE FILTER

Howard W. Flieger, Bethesda, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Mar. 26, 1979, Ser. No. 23,991

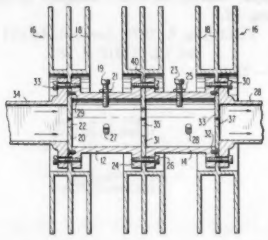
Int. Cl.[3] H01P *1/207*

U.S. Cl. 333—208 **18 Claims**

14. A waveguide filter comprising in combination:

(a) a body portion having first and second sections, each of said sections defining an inner, generally cylindrical cavity, each of said sections comprising a metal material having a low thermal coefficient of expansion, and each of said sections comprising a coating of a metal having a high electrical conductivity on the walls of said inner cylindrical cavity;

(b) first second and third iris members, said first iris member being positioned at a first end of said first one of said sections of said body portion, said second iris member being positioned between a second end of said first one of said sections and a first end of the second one of said



sections, and said third iris member being positioned at a second end of said second one of said sections, each of said irises comprising a plate of material having a high thermal conductivity and each having an aperture therein of predetermined dimensions for determining wave modes within said filter, each of said iris members extending beyond the outer edges of said body portion; and

(c) a plurality of sets of cooling fins, one of said sets of cooling fins being thermally coupled to one of said iris members.

4,260,968

ACTIVE FILTER NETWORK UTILIZING POSITIVE IMPEDANCE CONVERTERS

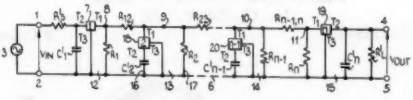
David G. Haigh, Walton-on-Thames, and Wolja Saraga, Orpington, both of England, assignors to National Research Development Corporation, London, England

Filed Mar. 14, 1979, Ser. No. 20,587

Claims priority, application United Kingdom, Mar. 14, 1978, 10143/78

Int. Cl.[3] H03H *11/04*

U.S. Cl. 333—214 **4 Claims**



1. An active inductorless band-pass filter network which constitutes an active simulation of a low-pass filter comprising a subnetwork of series connected inductors and shunt capacitors and a single shunt inductor acting as a high pass filter, said band-pass filter network having an input, an output, and a plurality of resonant circuits connected between said input and output to form a ladder, each of said resonant circuits comprising a positive impedance converter and an associated termination impedance which coacts with said positive impedance converter so as to provide a resultant impedance in said resonant circuit which is inversely proportional to the square of the complex frequency, said resonant circuits being coupled to one another by resistor networks to form said ladder, each of said resonant circuits comprising only two capacitors and also comprising at least one resistor whose value is adapted to be adjusted prior to use of said band-pass filter network to tune the resonant circuit associated with said resistor to a particular

resonant frequency, said input and output each being resistively terminated, and all capacitors of the filter being included within the said resonant circuits.

4,260,969

LOW VOLTAGE CIRCUIT BREAKER WITH AN ELECTROMAGNETIC TRIPPING DEVICE

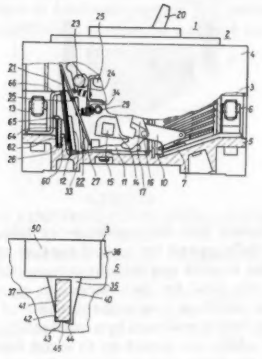
Werner Troebel, and Erwin Klatt, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 6, 1979, Ser. No. 17,980

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1978, 2810987

Int. Cl.³ H01H *73/48*

U.S. Cl. 335—38 **6 Claims**



1. In a low voltage circuit breaker with an insulating housing split along a parting line into an upper part and lower part, with an electromagnetic tripping device having a movably mounted armature, and a fixed magnet yoke disposed in said housing, the improvement comprising:

(a) said armature supported for rotation by laterally projecting trunnion pins; and

(b) means in said housing for separately mounting the armature and magnet yoke to the housing only including:

(i) pocket-like bearing openings formed in the lower part of the housing which openings are opened toward the parting line, and

(ii) counterparts in the upper housing parts confining the bearing openings in the ready to operate condition of the circuit breaker.

4,260,970

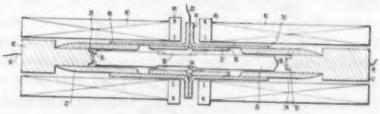
POSITION INSENSITIVE MERCURY RELAY SWITCH

Sheldon S. Bitko, East Brunswick, N.J., assignor to Fifth Dimension, Inc., Trenton, N.J.

Filed Jul. 18, 1979, Ser. No. 58,437

Int. Cl.³ H01H *29/00*

U.S. Cl. 335—52 **22 Claims**



1. A position insensitive mercury relay switch, comprising:

a generally cylindrical, hollow common contact assembly;

an elongate armature movably disposed within said common contact assembly;

insulator means sealingly engaged to at least one end of said common contact assembly, said insulator means functioning as a bearing which guides said armature for longitudinal movement and maintains said armature spaced from the inside wall of said common contact assembly;

a stationary contact supported within said insulator means and adapted to be operatively engaged by said armature; and

a film of mercury within said common contact assembly for electrically connecting said common contact assembly to said armature.

4,260,971

ELECTROMAGNETIC RELAY COMPRISING POSITIVELY GUIDED CONTACTS

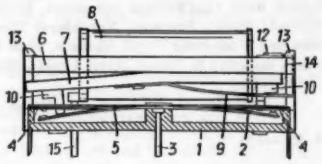
Manfred Baumruck, Vienna, Austria, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 9, 1979, Ser. No. 28,418

Claims priority, application Austria, Apr. 17, 1978, 2657/78

Int. Cl.³ H01H *50/58*

U.S. Cl. 335—128 **8 Claims**



1. An electromagnetic relay, mountable on a printed circuit board and including an E-shaped magnetic core, having an operating coil, and a roof-shaped armature, which is movable into the magnetic field of the core and serves to actuate movable contact springs of contact spring sets and is connected to an armature return spring, comprising:

armature means disposed on that side of the magnetic core facing said movable contact springs, said movable contact springs being positively connected substantially in the middle thereof to an insulating body in an interior cavity thereof and carry contacts at both ends;

contact carrier means positively connected to said insulating body in the latter and register with the ends of said movable contact springs; and having soldering taps protruding from said insulating body, said armature being provided with actuating lugs, which register with the ends of said movable contact springs and are engageable with the latter by the movement of the armature; and

armature return spring means having an angled end portion engaging the armature in a notch at an end of the armature; and wherein

the other end of the spring is gripped in the insulating body and the armature return spring bears in the middle thereof on a bearing surface inside the insulating body.

4,260,972

ELECTROMECHANICAL RELAY APPARATUS

Billy M. Everhart, Pataskala, and Harold E. McCullough, Blacklick, both of Ohio, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

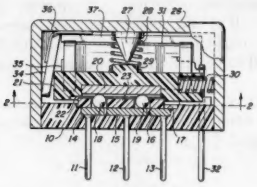
Filed Aug. 3, 1979, Ser. No. 63,535

Int. Cl.³ H01H *67/02*

U.S. Cl. 335—129 **15 Claims**

1. An electrical relay construction comprising a plurality of terminals **(11, 12, 13)**, a solenoid **(31)** and an armature **(34)**, characterized in a plurality of coplanar, electrically isolated and conductive platforms **(14, 15, 16)** connected respectively to the ends of said terminals **(11, 12, 13)**, an actuating member

(21) mounting an electrically conductive plate (20), and a plurality of electrically conductive, circular bodies (18, 19) clamped between said plate (20) and particular ones of said platform (14, 15), said armature (34) being operable responsive



to the energization of said solenoid (31) to move said actuating member (21) to roll said bodies (18, 19) between said plate (20) and said platforms (14, 15, 16) for selectively completing conducting paths between said terminals (11, 12, 13).

4,260,973

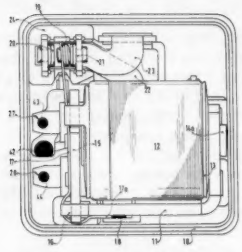
PLUG-IN ELECTROMAGNETIC RELAY

Karl Berthel, Roth; Olaf Schmid, Schwabach; Berthold Walter, Oberasbach; Ludwig Spechner, Nuremberg; Theodor Sturm, Sachsen, and Hans-Peter Degel, Ansbach, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 31, 1979, Ser. No. 90,045

Int. Cl.³ H01H *63/02*

U.S. Cl. 335—133 **9 Claims**



1. An electromagnetic relay of plug-in construction comprising:

a base plate (**10**) constituted of electric-insulation material;

a magnetic yoke (**11**) affixed to said base plate;

a magnetic core (**14**) mounted on said yoke;

a relay winding (**12**) wound on a spool (**13**), said spool being mounted on said core and said winding having wire ends electrically connected to metallic solder lugs (**27,28**) held in said spool;

an armature movably mounted on said yoke and provided with a movable relay contact (**19**);

a plurality of metallic strips having flat-prong tongues (**22,23,25,26**) held in said base plate (**10**) and extending therethrough for plug-in connections for said relay;

at least one counter-contact (**20,21**) mounted on one of said metallic strips (**22,23**) individual to it; and

at least one additional electrical component (**35**) set on or in said base plate (**10**) and having metallic leads extending therefrom;

a plurality of said metallic parts, denominated as lugs strips and leads, having formed portions shaped for interfitting with another of said metallic parts so as to provide a plurality of connection zones (**31,51**), disposed suitably for dip-soldered connections.

4,260,974

DEFLECTION UNIT FOR A CATHODE-RAY TUBE

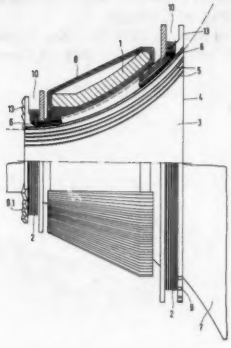
Friedrich Nelle, Straubing, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 9, 1979, Ser. No. 10,874

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1978, 2807978

Int. Cl.³ H01F *7/00*

U.S. Cl. 335—213 **5 Claims**



1. A deflection unit for a cathode-ray tube, which is arranged toroidally around the neck of the tube and opens up in a trumpet-like manner towards the screen, and produces an electromagnetic field for deflecting one or more electron beams, and in which, at least in one direction of displacement, the deflecting field is produced by a set of saddle-type coils, the windings of which are wound on to a coil form on the face sides and on the inner surface of the deflection unit, wherein the improvement comprises;

each of the two halves of the saddle-type coil is arranged on one half of a coil form comprising two parts, with grooves determining the exact coil winding distribution being provided for in the surface of the coil form facing the tube wall;

the groove cross-sections are so designed that said grooves are almost completely filled with wires; and

at least some of said grooves deviate in their direction from the planes of the tube axis.

4,260,975

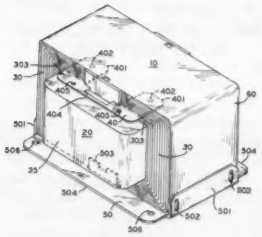
TRANSFORMER WITH TERMINAL BOARD SUPPORT AND CLAMPING-MOUNTING STRUCTURE

Albert F. Wilcox, Yoder; Don C. Wood, Fort Wayne, and Richard H. Wagner, Huntertown, all of Ind., assignors to General Electric Company, Salem, Va.

Filed May 29, 1979, Ser. No. 42,764

Int. Cl.³ H01F *15/10, 27/26*

U.S. Cl. 336—65 **5 Claims**



1. An electrical transformer comprising:

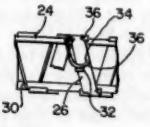
(a) first and second core members disposed side by side, each of said core members being in the form of a plurality of nested laminations wrapped around a central opening;
(b) a terminal board support comprising first and second substantially flat, elongated tabs, said tabs being inserted respectively between adjacent laminations in said first and second core members, a portion of each of said tabs extending beyond each of said core members for attachment to a terminal board;
(c) a base member having a pair of upturn flanges at opposite ends thereof, said core members being disposed side by side on said base member between said flanges;
(d) a generally U-shaped band having a cross member and opposed depending leg member said band tightly fitting over said core members, the ends of the leg members being fixedly secured to said flanges of said base member whereby said band compresses said laminations of said core members to frictionally engage said tabs and to hold said core members in position on said base member.

4,260,976

CURRENT LIMITING FUSE WITH AUXILIARY ELEMENT

Harold L. Miller, Jefferson Borough, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 9, 1979, Ser. No. 11,019
Int. Cl.³ H01H *85/38*
U.S. Cl. 337—162 **4 Claims**



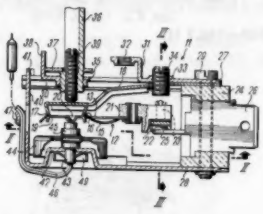
1. A fuse, comprising:
(a) an insulating fuse housing;
(b) spaced terminal means disposed at either end of said housing and communicating with the internal portion thereof;
(c) fuse spider means disposed within said internal portion;
(d) main fuse element means wound around said spider means, said main fuse element means having an area of reduced cross section; and
(e) auxiliary fuse element means disposed within said internal portion of said fuse, one portion of said auxiliary fuse element means being disposed in circuit relationship with one of said terminal means, another portion of said auxiliary fuse element means being enclosed in a sheath of flexible material of known dielectric strength, said sheath being disposed in contact with and around said region of reduced cross section, said dielectric strength being sufficient to electrically isolate said main fuse element means from said auxiliary fuse element means during a non-fusing condition, but being insufficient to prevent an electric arc from existing between said main fuse element means and said auxiliary fuse element means during a fusing operation, said sheath being disposed in said area of reduced cross section for being purposely melted by an arc between said main fuse element means and said auxiliary fuse element means after said main fuse element means has begun to blow for thus causing said region of reduced cross section to melt.

4,260,977

THERMOSTATIC SWITCH

Robert Kicherer, Im Bergfeld 33, 7134 Knittlingen, and Manfred Schwarze, Rote-Tor-Str. 53, 7519 Oberderdingen, both of Fed. Rep. of Germany

Filed Apr. 11, 1979, Ser. No. 29,239
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1978, 2815987
Int. Cl.³ H01H *37/76, 37/12*
U.S. Cl. 337—318 **18 Claims**



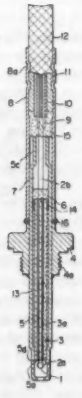
1. A thermostatic switch comprising:
a metal casing;
a snap switch disposed in the casing, the snap switch having a snap spring supported by a resiliently movable snap spring carrier running substantially parallel to the snap spring;
a thermal expansion system having an expansion member which acts on the snap spring;
a setting element for adjustably positioning the snap spring carrier relative to the expansion member;
an insulator forming one end face of the metal casing, supporting fixed electrical contacts projecting therethrough; and,
an electrical contact bridge disposed on the snap spring but electrically insulated therefrom, the contact bridge cooperating with the fixed contacts.

4,260,978

GAS DETECTOR ELEMENT

Eturo Yasuda; Yoshihiro Segawa, both of Okazaki, and Minoru Ohta, Anjo, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed May 21, 1979, Ser. No. 40,874
Claims priority, application Japan, May 19, 1978, 53-60530
Int. Cl.³ H01L *7/00*
U.S. Cl. 338—34 **3 Claims**



1. In a gas detector element comprising a sintered material of a metal oxide, the electric resistivity of which varies depending

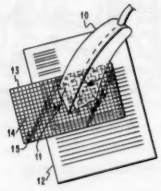
on whether the composition of the inflammable gas is an oxidative atmosphere or a reductive atmosphere, the size of the composing particles of said sintered material is in the range from 0.5μ to 5μ in equivalent circle diameter.

4,260,979

APPARATUS FOR SENSING NON-CODED IMAGES

Robert C. Smith, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1979, Ser. No. 108,439
Int. Cl.[3] G06K *9/00*
U.S. Cl. 340—146.3 H **14 Claims**



1. A hand-held scanner for sensing non-coded images on a substrate comprising

a group of light sensitive elements for sensing the light patterns of said images as the scanner is moved across said substrate, and

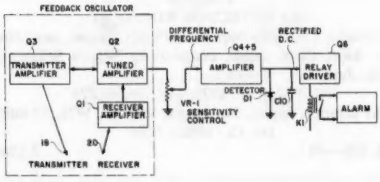
means for sensing the translational velocity and rotation of said scanner.

4,260,980

BLIND SPOT DETECTOR FOR VEHICLES

Mitchell G. Bates, 428 S. Harrison, Nixa, Mo. 65714

Filed Apr. 30, 1979, Ser. No. 34,639
Int. Cl.[3] G08G *1/00*; G08B *13/16*
U.S. Cl. 340—32 **6 Claims**



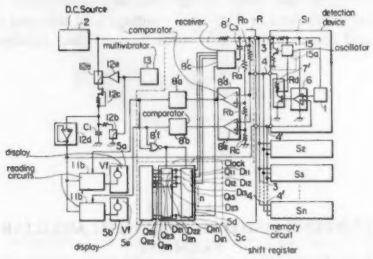
1. Apparatus for detecting the presence of an object moving relative to a vehicle within a location adjacent to said vehicle and hidden from the view of the operator of the vehicle comprising: a first transducer mounted on said vehicle for transmitting continuous ultrasonic signals of a given ultrasonic frequency into said hidden location, a second transducer mounted on said vehicle in spaced relation to said first transducer for receiving ultrasonic signals reflected from an object present in said hidden location, a first high frequency audio amplifier powering said first transducer to cause said first transducer to transmit said ultrasonic signals, a second high frequency audio amplifier for amplifying the ultrasonic signals received by said second transducer, a tuned amplifier coupled to said first high frequency audio amplifier and adapted to receive a portion of the signal amplified by said second high frequency audio amplifier, said tuned amplifier having an output only when there is relative motion between said object and said vehicle, said output of said tuned amplifier being a relatively low audio frequency signal representing a differential frequency between the transmitted signals and the received signals resulting from the change in the transmitted signals as produced by the relative motion between said object and said vehicle, a low frequency audio amplifier for amplifying a portion of the output of said tuned amplifier, and means responsive to the amplified signal from said low frequency audio amplifier for actuating an alarm when said portion of the output from said tuned amplifier exceeds a predetermined value.

4,260,981

PHYSICAL CONDITION MONITORING SYSTEM FOR DETECTION IN REMOTE PLACES

Yukio Yamauchi, Kawasaki, and Takeshi Tanigawa, Machida, both of Japan, assignors to Hochiki Corporation, Tokyo, Japan

Filed May 2, 1979, Ser. No. 35,354
Claims priority, application Japan, May 4, 1978, 53-53361
Int. Cl.[3] G08B *26/00*
U.S. Cl. 340—870.11 **4 Claims**



1. A monitoring system comprising:

a constant voltage power source,

a circuit means connected to said power source for generating detection mode alternation signals,

an AND means having first and second input terminals, means applying said detection mode alternation signals to said first input terminal,

a display portion coupled to the output of said AND means,

a receiving means comprising a switching means connected to said power source, said switching means having a control terminal, the output terminal of said switching means being connected to the second input terminal of said AND means,

a detecting means connected to said power source for detecting a predetermined physical quantity through the electrical power of said power source, and

a detection device connected to said detecting means and having an output control means with an output control terminal, said detection device being connected to apply an output corresponding to the physical quantity detected by said detecting means on the control terminal of said switching means, the output control terminal of said output control means being connected to receive the output of said detection mode alternation signal generation means.

4,260,982

PULSE CODE MODULATION RESPONSIVE ALARM SYSTEM

Angelo P. DeBenedictis, 54 Carleton Rd., Carlisle, Mass. 01741, and Plato Zorzy, P.O. Box 2074, Salem, Mass. 01970

Filed Oct. 25, 1979, Ser. No. 88,034
Int. Cl.[3] G08B *3/10*
U.S. Cl. 340—539 **10 Claims**

1. A system for detecting the displacement of two objects comprising:

A. a transmitter associated with one object, said transmitter including;

(i) power supply means;

(ii) means connected to said power supply means for

generating a constant frequency signal having a preselected pattern of pulse code modulation; and

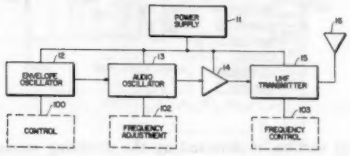
(iii) antenna means connected to said generating means for radiating said constant frequency pulse code modulated signal; and

B. a receiver associated with the second object, said receiver including:

(i) receiving means for receiving the pulse code modulated, constant frequency signal and for detecting the pulse code modulation signal portion thereof;

(ii) presence detecting means connected to said receiving for generating a presence detected signal in response to the presence of a constant frequency signal characterized by the pulse code modulation pattern;

(iii) alarm means connected to the presence detecting means for generating an alarm signal in response to the absence of a presence detected signal.



4,260,983

PRESENCE SENSING DETECTOR AND SYSTEM FOR DETECTING A RECEIVER/TRANSMITTER DEVICE AFFIXED TO AN ARTICLE

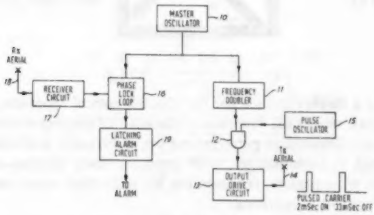
John B. Falck, London; Keith B. Glanvill, and John N. Reid, both of Thorpe Bay, all of England, assignors to Tag Radionics Limited, Rochford, England

Filed Jan. 11, 1979, Ser. No. 2,866

Claims priority, application United Kingdom, Jan. 11, 1978, 1135/78

Int. Cl.³ G08B *13/18*

U.S. Cl. 340—572 **27 Claims**



1. A presence sensing system, comprising a detector having a transmitter for transmitting an interrogation signal and a receiver for receiving a presence indicating signal, and a receiver/transmitter device the presence of which is to be detected adapted to receive the interrogation frequency and to transmit said presence indicating signal in response thereto, wherein the detector further comprises a phase lock loop circuit having a first input coupled with the output of the receiver a second input for a reference signal and an output for providing a phase locked signal indicative of phase coherence between the signals on said first and second inputs, a frequency generator having an output coupled with said second input of the phase lock loop, and an alarm coupled with the output of the phase lock loop actuable in response to said phase locked signal.

4,260,984

COUNT DISCRIMINATING FIRE DETECTOR

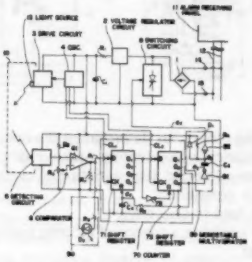
Hiroshi Honma, Hino, Japan, assignor to Hochiki Corporation, Tokyo, Japan

Filed Mar. 13, 1980, Ser. No. 129,836

Claims priority, application Japan, Mar. 17, 1979, 54-33726[U]; Mar. 17, 1979, 54-33727[U]

Int. Cl.³ G08B *17/10*

U.S. Cl. 340—630 **6 Claims**



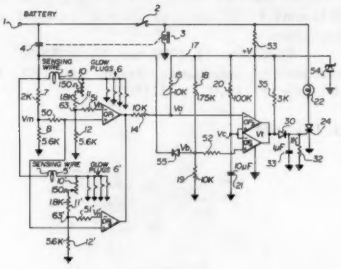
1. In a count discriminating fire detector comprising a detecting circuit responsive to a change in a physical parameter indicative of a fire such as smoke, heat, flame or the like and adapted to be operated by pulses so as to produce at a predetermined period a pulse output having an amplitude corresponding to the degree of said change, a comparator circuit for producing a detection pulse in synchronism with said period when the amplitude level of said pulse output exceeds a predetermined reference level, a counter circuit for producing an output when a predetermined number of said detection pulses are applied thereto consecutively, said counter circuit being adapted to be reset at the expiration of a predetermined time after the application of said detection pulses is interrupted, a switching circuit responsive to said output of said counter circuit to produce an alarm signal, an oscillator circuit adapted for pulse operating said detecting circuit, a first capacitor for supplying by its stored charge a supply power to said detecting circuit, said comparator circuit, said counting circuit and said oscillator circuit, and a voltage regulator circuit for supplying a constant-voltage DC output to said first capacitor, said voltage regulator circuit having a current limiting function, wherein said switching circuit is connected to a pair of power supply and signal lines from an alarm receiving panel for receiving a DC supply power through said lines and for establishing, when operated, a low impedance between said lines to send an alarm signal to said receiving panel, and wherein said detecting circuit, said comparator circuit, said counter circuit and said oscillator circuit are supplied with said DC supply power from said lines through said voltage regulator circuit and said first capacitor, the improvement comprising:

a monostable multivibrator connected between an output of said counter circuit and an input of said switching circuit, said monostable multivibrator having a time constant equal to or smaller than a time constant for charging said capacitor by the output of said voltage regulator circuit, whereby during a transition period just following the closing of a circuit for said DC supply power the output of said counter circuit applied to said monostable multivibrator is not supplied to the input of said switching circuit.

4,260,985
RESISTIVE DEVICE SENSOR

Rodney Hayden, Stoney Creek, Canada, assignor to TRW Inc., Cleveland, Ohio

Filed Feb. 11, 1980, Ser. No. 120,430
Claims priority, application Canada, Feb. 14, 1979, 321469
Int. Cl.[3] G08B 21/00
U.S. Cl. 340—635 5 Claims



1. A sensing circuit for determining the operating state of at least one electrically conducting resistive device requiring an initial non sensed period after initiation of current through said device which comprises:

a resistive feed to said device,

means for applying a source of electric current to said resistive feed,

means sensing voltage applied across said device by said resistive feed,

means comparing said voltage sensed with a reference and developing an output dependent upon the compared value,

means developing a time varying voltage initiated at a time corresponding to a time of operation of said source applying means, said time varying voltage passing through a known range over a predetermined time period following said initial period,

means feeding said compared value output to a further comparison device for comparison of said compared value output with said time varying voltage and developing an output dependent upon the magnitude of said compared value output with respect to said time varying voltage,

means inhibiting output from said further comparison device before said time varying voltage reaches said known range, and

means indicating output from said further comparison device when said output corresponds to said sensed voltage being of a chosen value with respect to said reference.

4,260,986
TOOL WEAR DETECTING SYSTEM FOR A NUMERICALLY CONTROLLED MACHINE TOOL

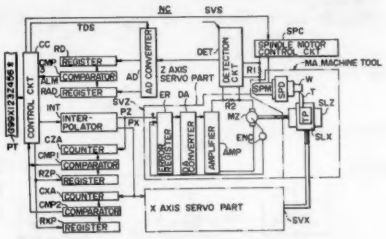
Kengo Kobayashi, Kawasaki, Japan, and Yasunobu Sawada, Elk Groove Village, Ill., assignors to Fujitsu Fanuc Limited

Filed Apr. 23, 1979, Ser. No. 32,696
Claims priority, application Japan, Apr. 26, 1978, 53-49412
Int. Cl.[3] G08B 21/00
U.S. Cl. 340—680 9 Claims

1. A tool wear detecting system for a numerically controlled machine tool, which controls the movement of a tool relative to a workpiece along a commanded path to cut the workpiece, comprising means for detecting a load on the tool or workpiece,

wherein a position on or section of the commanded path is specified in advance and the load on the tool or workpiece at the time the tool passes through the specified position or section during an initial process is detected by the detecting means; storage means, operatively connected to said detecting means, for storing the load detected by said detecting means; and comparator means, operatively connected to said detecting means and said storage means,

wherein in each of the subsequent processes, the load on the tool or workpiece, at the time the tool passes through the position or section corresponding to the specified position

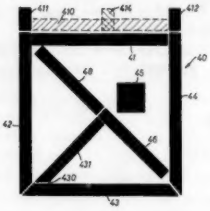


or section, is detected by the detecting means and the detected data is compared with the data stored in the storage means and when the difference between them is larger than a predetermined value, an alarm signal is produced to indicate that the tool is worn out.

4,260,987
DISPLAY DEVICE

Maged A. Osman, Zurich, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed May 31, 1978, Ser. No. 911,163
Claims priority, application Switzerland, Jul. 15, 1977, 8768/77
Int. Cl.[2] G06F 3/14; G09F 9/32
U.S. Cl. 340—756 9 Claims



1. In a display device for the electro-optical representation of Indian numerals, wherein a plurality of display-active regions are disposed in patterns and are electrically individually operated in combination, with predetermined display-active regions of a pattern representing an individual numeral, the improvement comprising:

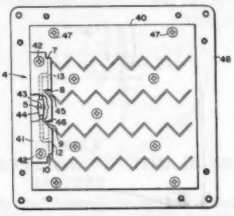
each display pattern of each Indian numeral comprising not more than ten display-active regions disposed in the form of a frame which comprises an upper and a lower one-piece bar which extend approximately horizontally, two one-piece parallel side bars which are approximately equal in length and which in each case extend between the appertaining ends of the upper and lower bars of the frame, three partial diagonal bars which lie in the bottom or left-hand half of the frame, a planar display-active region lying in the right-hand upper quarter of the frame, and at least two bar fragments projecting upwards from the frame near the upper corners of the frame.

4,260,988

STRIPLINE ANTENNA FOR MICROWAVES

Wasuke Yanagisawa, and Hiroshi Watanabe, both of Kamifukuoka, Japan, assignors to New Japan Radio Company Ltd., Tokyo, Japan

Continuation of Ser. No. 828,997, Aug. 30, 1977, abandoned. This application Apr. 4, 1979, Ser. No. 27,105
Claims priority, application Japan, Aug. 30, 1976, 51-103504
Int. Cl.[3] H01Q *1/38*
U.S. Cl. 343—700 MS 3 Claims



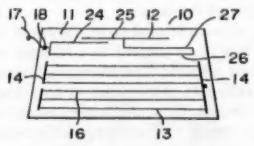
1. A strip-line antenna for microwaves wherein:
one or more strip-line of zig-zag type for microwaves are attached onto one surface of a first dielectric plate;
a metal conductor is attached to the other surface of the first dielectric plate;
respected input ends of said antennas of zig-zag type are connected to output terminals of a strip-line branching circuit of a shielded construction, said strip-line branching circuit of shielded construction is arranged such that a second dielectric plate, onto which another metal conductor is attached, is attached onto an unshielded strip-line branching circuit attached onto said one surface of said first dielectric plate; and
input terminals of said strip-line branching circuit of shielded construction are connected to a central conductor of a coaxial feeding cable.

4,260,989

ANTENNA SYSTEM FOR WINDOW GLASS OF AUTOMOBILE

Kenichi Ishii, and Takayasu Hokusho, both of Yokohama, Japan, assignors to Asahi Glass Company, Limited, Tokyo, Japan

Filed Apr. 10, 1979, Ser. No. 28,651
Claims priority, application Japan, Apr. 11, 1978, 53-41784
Int. Cl.[3] H01Q *1/02, 1/32*
U.S. Cl. 343—704 13 Claims



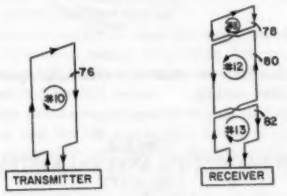
1. In an antenna system for a window glass of an automobile, comprising: a transparent glass plate; a defogging electric heating element made of a plurality of heating strips and a pair of bus bars at both sides of the heating strips disposed in a heating region of the glass plate; and an antenna disposed above the defogging electric heating element; the improvement characterized in that the winding pattern of the antenna is asymmetric to the vertical center line of the window glass; a feeding point to the antenna is disposed at a side part of the window glass; and the antenna comprises a main antenna strip and an auxiliary antenna strip disposed adjacent and parallel to the main antenna strip with a gap in the top to bottom direction of the window glass, and a phase adjusting antenna strip connecting the main antenna strip to the auxiliary antenna strip.

4,260,990

ASYMMETRICAL ANTENNAS FOR USE IN ELECTRONIC SECURITY SYSTEMS

George J. Lichtblau, 13 Tannery Hill Rd., Ridgefield, Conn. 06877

Filed Nov. 8, 1979, Ser. No. 92,325
Int. Cl.[3] G08B *13/24*
U.S. Cl. 343—742 7 Claims



1. For use in an electronic security system having a transmitter for providing in a surveillnance zone an electromagnetic field of a frequency which is repetitively swept over a predetermined frequency range, a resonant tag of resonant frequency within the swept range and a receiver for detecting the presence of the resonant tag in the surveillance zone and to provide an alarm indication thereof, an antenna system comprising:
a transmitting antenna adapted for coupling to said transmitter and having at least one loop lying in a plane;
a receiving antenna adapted for coupling to said receiver and having at least two twisted loops lying in a common plane, each loop being twisted 180° and in phase opposition with each adjacent loop;
said antennas having a different number of loops and a mutual magnetic coupling therebetween and said receiving antenna having an effective total loop area of one phase equal to the effective total loop area of opposite phase;
said transmitting antenna and said receiving antenna being disposed in spaced substantially parallel relationship on respective opposite sides of a passage through which said tag must pass for detection.

4,260,991

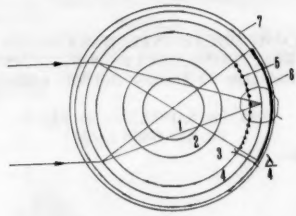
LUNEBERG TYPE PASSIVE REFLECTOR FOR CIRCULARLY POLARIZED WAVES

Francois Dachert; Jean Gelin, and Raymond Ropars, all of Paris, France, assignors to Societe Lignes Telegraphiques et Telephoniques, Conflans-Sainte-Honorine, France

Filed Jul. 24, 1979, Ser. No. 60,201
Claims priority, application France, Aug. 4, 1978, 78 23055
Int. Cl.[3] H01Q *15/08*
U.S. Cl. 343—756 4 Claims

1. A wide angular aperture Luneberg type reflector for circularly polarized waves comprising:
a spherical core;
a plurality of concentric dielectric shells disposed around said spherical core the index of said core being selected according to the Luneberg Law;
a protective radome disposed around the ultimate external shell;
a piece of woven cloth adhesively secured to a portion of the penultimate shell and including a warp and a weft, said warp comprising flax textile threads and said weft comprising parallel enameled copper wires alternately separated by textile threads; and

a continuous conductive coating deposited on at least a part of the inner face of said radome, said piece of woven cloth



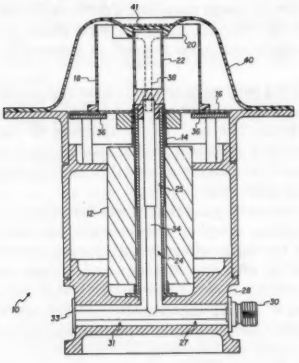
being located one quarter wavelength apart from said conductive coating.

4,260,992

RADIO NAVIGATION ANTENNA SYSTEM FOR AIRCRAFT

Mardis V. Anderson, Richardson, and Theodore A. Dumas, Dallas, both of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 6, 1979, Ser. No. 101,049
Int. Cl.³ H01Q *3/12*
U.S. Cl. 343—761 **5 Claims**



5. An antenna system comprising:

a motor having an electrically conductive hollow shaft;

a coaxial conductor with the same axis as said hollow shaft and passing therethrough, said coaxial conductor comprising a center conductor and an outer conducting sleeve, with said sleeve sufficiently close to the wall of the shaft to permit effective capacitive coupling at the frequencies at which the antenna operates;

a cylindrical, conductive fed element at an end of the coaxial conductor extending from said center conductor along the axis thereof;

a conductive ground plane disc attached to and electrically connected with said shaft and perpendicular thereto, at the end of the coaxial conductor, exposed over substantially the entire surface of the disc to radiation from said fed element;

a low mass cylindrical reflector support mounted on said disc around the fed element and having the same axis as said fed element, said support being formed with thin walls of a high dielectric material;

a T-shaped reflector on said support, formed as a conductive layer conforming to the cylindrical surface of the support, with arms of the T extending parallel to the surface of said disc and a center leg of the T being parallel to said fed element and electrically connected to the disc, said leg being approximately the length of said fed element;

a planar conductive surface electrically connected to the outer sleeve of said coaxial conductor and placed parallel to said disc at the surface of the disc opposite said reflector support and sufficiently close to the disc to permit effective capacitive coupling therewith at the frequencies at which the antenna operates; and

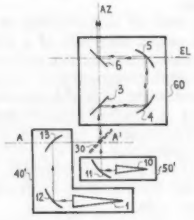
a dielectric radome covering said fed element, said support and said disc, and including a portion for supporting the end of the fed element opposite the end of said coaxial conductor.

4,260,993

DUAL-BAND ANTENNA WITH PERISCOPIC SUPPLY SYSTEM

Claude Aubry, and Daniel Renaud, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jun. 18, 1979, Ser. No. 49,505
Claims priority, application France, Jun. 20, 1978, 78 18408
Int. Cl.³ H01Q *3/12, 19/19*
U.S. Cl. 343—779 **3 Claims**



1. A dual-band antenna for the transmission and reception of radiant energy with mutually orthogonal polarization, comprising:

a reflector assembly of Cassegrain type rotatable about a vertical azimuth axis and pivotable about a horizontal elevational axis;

a first feed for radiating an outgoing beam and receiving an incoming beam with a flat wavefront in a lower band of microwave frequencies;

a second feed for radiating an outgoing beam and receiving an incoming beam with a flat wavefront in a higher band of microwave frequencies;

a dichroic mirror centered on said azimuth axis and inclined thereto in a plane parallel to a bisector of the angle between said azimuth and elevational axes, said dichroic mirror reflecting frequencies in said lower band while passing frequencies in said higher band; and

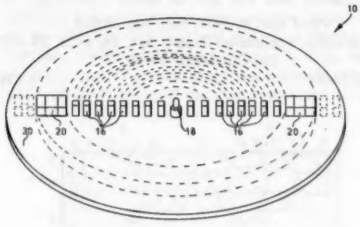
a periscopic supply system interposed between said reflector assembly and said dichroic mirror, and supply system including oppositely inclined flat first and second mirrors disposed one above the other in line with said dichroic mirror and confronting concave third and fourth mirrors disposed one above the other at a location offset from said azimuth axis; said first feed including a lower-frequency radiation source, a concave fifth mirror in line with said lower-frequency source, and a concave sixth mirror confronting said fifth mirror and an upper surface of said dichroic mirror; said second feed including a higher-frequency radiation source and a seventh mirror in a beam path between said higher-frequency source and a lower surface of said dichroic mirror.

4,260,994

ANTENNA PATTERN SYNTHESIS AND SHAPING

Ernest G. Parker, Morristown, N.J., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 9, 1978, Ser. No. 959,395
Int. Cl.³ H01Q *1/50*
U.S. Cl. 343—854 **9 Claims**



1. An antenna for radiation pattern synthesis over a defined frequency band using the technique of spatial harmonics, comprising:

a counterpoise;

a monopole radiator for generating electromagnetic radiation at a frequency within the band;

coupling means for coupling the monopole radiator to a source of power;

a plurality of concentric ring arrays of compensated parasitic antenna elements excitable by and concentric with respect to the monopole radiator having the capability of generating a plurality of predetermined harmonic radiation patterns and means for establishing a different harmonic radiation pattern for each array, each ring array adjusted in radius to be near the first peak of the Bessel curves of order equal to the harmonic number;

control means for activating the parasitic antenna elements in a predetermined manner to generate a predetermined number of the first through eighth harmonics and consequently spatial harmonic radiation to form a predetermined electromagnetic wave pattern; and

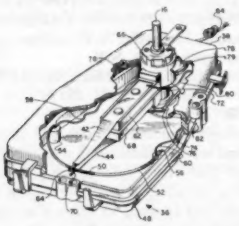
means for adjusting the predetermined harmonics in phase and amplitude to approximate the applicable Fourier coefficients for the predetermined wave pattern.

4,260,995

SLIDE WIRE ASSEMBLY

Willard R. Strauss, St. Paul, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 22, 1979, Ser. No. 22,690
Int. Cl.³ G01D *3/08*
U.S. Cl. 346—32 **9 Claims**



1. A mechanical to electrical transducer assembly comprising

a resistor element having an elongated electrically conductive surface affording access to an electrical resistance exhibited by said element,

a first resistor element contact means having a support arm with a first electrically conductive contact end slidably engaging said conductive surface and a pivotally mounted end opposite to said contact end,

a second resistor element contact means having a second support arm with a second electrically conductive contact end slidably engaging said conductive surface and a pivotally mounted end opposite to said contact end arranged coaxially with said pivotally mounted end of said support arm of said first contact means,

a first drive means for driving said first contact means,

a flexible connection means arranged to connect said first drive means to said pivotally mounted end of said support arm of said first contact means,

a second drive means for driving said second contact means,

a second connection means connecting said second drive means to said pivotally mounted end of said support arm of said second contact means,

first pressure developing means for urging said first contact means on said flexible connection means to apply a first contact pressure to said first conductive contact end,

second pressure developing means for urging said second contact means to apply a second contact pressure to said second conductive contact end and

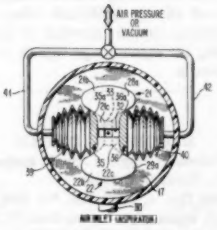
clamping means for concurrently actuating said first and second pressure developing means whereby said first and second conductive contact ends are maintained in electrical contact with said conductive surface.

4,260,996

ASPIRATED INK JET PRINTER HEAD

Alvin L. Wittwer, Paris, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 23, 1979, Ser. No. 32,424
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **5 Claims**



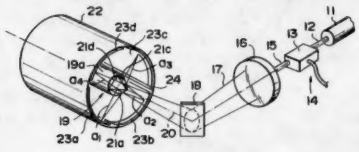
1. In a continuous stream ink jet printer including a nozzle for emitting a continuous stream of ink drops, a charge electrode adjacent said nozzle for charging ink drops, and charge deflection electrodes adjacent said charge electrode for deflecting charged ink drops in accordance with the charge thereon, the improvement comprising; a tubular housing including a cavity therein; said deflection electrodes being disposed in said cavity and including at least one pair of spaced apart confronting surfaces forming a first pair of sidewalls for a tunnel within said cavity and between said surfaces; a second pair of sidewalls composed of a dielectric material and disposed in said cavity, each of said second pair of sidewalls including a thickened portion merging into a support, and means connected to said support for effecting movement of said thickened portions between a recessed position in said cavity spaced from said confronting surfaces and into another position against said confronting surfaces thereby forming said tunnel.

4,260,997

RECORDING DEVICE

Takashi Fukui, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 4, 1979, Ser. No. 100,108
Claims priority, application Japan, Dec. 23, 1978, 53-162422
Int. Cl.[3] G01D *9/42, 15/24;* H04N *1/06;* B41B *13/00*
U.S. Cl. 346—108 6 Claims



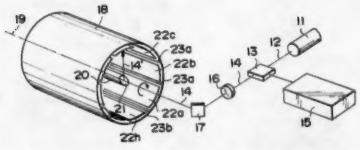
1. A recording device for simultaneously recording input image signals on a plurality of photosensitive recording media comprising a substantially cylindrical support member on the inner surface of which the photosensitive recording media are supported, a plurality of mirror surfaces in the form of inclined surfaces of a polygonal pyramid provided within the support member, an acousto-optic modulator for modulating a recording light beam with the input image signals, and a means for guiding the modulated light beam along the longitudinal axis of the cylindrical support member, the central axis of the polygonal pyramid being in coincidence with the longitudinal axis of the cylindrical support member, the mirror surfaces being rotatable about the longitudinal axis of the cylindrical support member with respect thereto, the modulated light beam impinging upon the mirror surfaces at an area including the apex thereof travelling along the longitudinal axis of the cylindrical support member, the mirror surfaces reflecting the corresponding parts of the modulated light beam in different direction dividing the modulated light beam into a plurality of light beams, the divided light beams being focussed on the respective photosensitive recording media scanning the same by rotation about and sliding movement along the longitudinal axis of the cylindrical support member of the mirror surfaces thereby recording the input image signals on the photosensitive recording media.

4,260,998

RECORDING DEVICE

Takashi Fukui, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 4, 1979, Ser. No. 100,109
Claims priority, application Japan, Dec. 23, 1978, 53/162421
Int. Cl.[3] G01D *9/42, 15/24*
U.S. Cl. 346—108 6 Claims



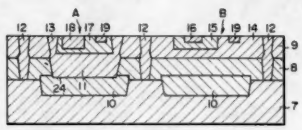
1. A recording device for making a plurality of hard copies from a single input image signal comprising a scan converter which stores the input image signal and repeatedly reads out the signal, an acousto-optic modulator which is supplied with the stored image signal from the scan converter and modulates a recording light beam with the supplied image signal, and a deflector which deflects the modulated recording light beam to scan a plurality of photosensitive recording media to record the image signal thereon.

4,260,999

SEMICONDUCTOR DEVICE AND METHOD OF MAKING THE SAME

Fumio Yoshioka, Sakado, Japan, assignor to Toko, Inc., Tokyo, Japan

Filed Apr. 6, 1979, Ser. No. 28,022
Claims priority, application Japan, Apr. 14, 1978, 53-43970
Int. Cl.[3] H01L *29/72*
U.S. Cl. 357—34 8 Claims



1. A semiconductor device comprising a semiconductor substrate of a first conductivity type; a first and a second epitaxial layer provided on said semiconductor substrate, each of said first and second epitaxial layers being of a second conductivity type opposite to said first conductivity type; an isolation layer of the first conductivity type extending from the surface of said second epitaxial layer to said semiconductor substrate so that a plurality of regions isolated by means of said isolation layer are defined in said epitaxial layers; a first buried layer of said second conductivity type on which a transistor is formed in at least one of said regions; a PNP (NPN) transistor having a collector region comprising a second buried layer of the first conductivity type and a layer of the first conductivity type extending from the surface of said second epitaxial layer to said second buried layer, said second buried layer extending as far as the second epitaxial layer and having a PN junction formed at the bottom thereof, said PN junction being provided in contact with said first buried layer within the thickness of said first epitaxial layer, a base region defined by that portion of said second epitaxial layer which is surrounded by said collector region, and an emitter region defined by layer of the first conductivity type surrounded by the base region; as NPN (PNP) transistor comprising a collector region defined by said first buried layer and said first and second epitaxial layers, a base region defined by layer of the first conductivity type surrounded by the collector region, and an emitter region defined by layer of the second conductivity type surrounded by the base region.

4,261,000

HIGH VOLTAGE SEMICONDUCTOR DEVICE HAVING AN IMPROVED DV/DT CAPABILITY

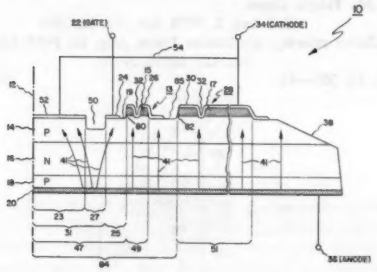
Victor A. K. Temple, Jonesville, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 23, 1980, Ser. No. 152,770
Int. Cl.[3] H01L *29/74*
U.S. Cl. 357—38 7 Claims

1. A high voltage semiconductor device comprising:

at least first and second cathodes, a collective gate region; an anode, said collective gate region adjoining said first cathode, and including a first gate region adjacent to the first cathode and adapted to receive an applied signal, a second gate region and an isolation region separating the first gate region and the first cathode; a conductive element coupling said second gate region to said second cathode, each of said first and second cathodes, respectively, having an emitter layer affixed beneath an electrode, respectively, and being separated from said anode by a plurality of layers of alternating conductivity-type material; said second cathode being coupled to said con-

ductive element by first of said layers, said second cathode and said anode being adapted to be coupled between opposite ends of a relatively high voltage potential source having periodic relatively high voltage transients so that periodic occurrences of the voltage transients between said second cathode and said anode generate capacitive charging currents within said first layer and a second of said layers which are manifested as capacitive gate current in the emitter layers of said first and second cathodes; isolation means located on a top portion of the first layer in said isolation region of said collective gate region, said isolation means providing a relatively high impedance path to a current generated upon application of a signal to said first gate region of the gate region and substantially



preventing gate current from being conducted to the second cathode through said second gate region and said conductive element; and a conductive ring coupled to said second gate region and to said second cathode, said isolating region providing a relatively high impedance to the transient generated capacitive charging currents flowing within said second gate region, said conductive ring providing a shunt path for transient generated capacitive charging currents flowing within said second gate region, whereby a portion of the transient generated capacitive currents are diverted away from the emitter layer of said second cathode such that the transient generated capacitive charging currents which are manifested as gate current are reduced, thereby improving the dv/dt capability of said device.

4,261,001

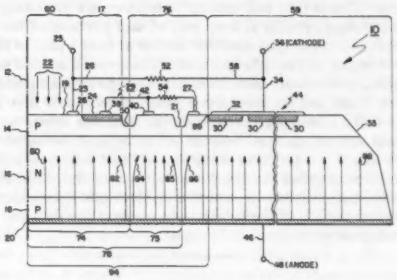
PARTIALLY ISOLATED AMPLIFYING GATE THYRISTOR WITH CONTROLLABLE DV/DT COMPENSATION, HIGH DI/DT CAPABILITY, AND HIGH SENSITIVITY

Victor A. K. Temple, Jonesville, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 23, 1980, Ser. No. 152,772
Int. Cl.³ H01L *29/74*
U.S. Cl. 357—38 **5 Claims**

1. An amplifying gate thyristor having a gate region, a pilot thyristor stage, a main thyristor stage, and an anode, each of said pilot thyristor stage and said main thyristor stage including an electrode and an emitter layer affixed to the electrode thereunder, respectively, said electrode of the main thyristor stage, together with the emitter layer thereunder, forming the cathode of the amplifying gate thyristor, said cathode and said anode adapted to be coupled to a relatively high voltage source capable of supplying sufficient dv/dt current to said pilot thyristor to render said pilot thyristor conductive and thus render said amplifying gate thyristor conductive, said amplifying gate thyristor further comprising:

a plurality of contact regions disposed on a top surface thereof and including a first contact region located in said gate region radially inward of said pilot thyristor region, a second contact region located to contact a p-base region of said main thyristor and further comprising the gate electrode of said main thyristor region, a third contact region located between said electrode of said pilot thyristor stage and said second contact region, a conductive element coupling said third contact region to the electrode of said pilot thyristor and a first isolation means situated between said third contact region and said electrode of the pilot thyristor;



a first impedance means including a second isolation means and a first resistive element, said second isolation means situated between said second and third contact regions;

a second impedance means coupled between said first contact region and said cathode; and

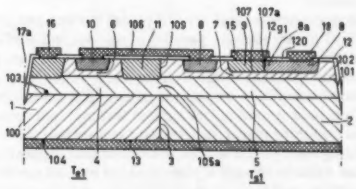
a compensation region extending between the central portions of said first and said second isolation means for conducting dv/dt current therein.

4,261,002

MONOLITHIC COMPLEMENTARY DARLINGTON

Bernard Roger, Carpiquet, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 13, 1978, Ser. No. 960,426
Claims priority, application France, Nov. 14, 1977, 77 34126
Int. Cl.³ H01L *27/04*
U.S. Cl. 357—46 **12 Claims**



1. A semiconductor device comprising a semiconductor body having at least first and second bipolar and complementary vertical transistors, each transistor comprising a central base region and two external regions serving as emitter and

collector regions, said body comprising a substrate covered by a first epitaxial layer of a first conductivity type on which extends a second epitaxial layer of the second conductivity type opposite to the first, the base region of the first transistor and at least a part of an external region of the second transistor being formed by coplanar portions of the first epitaxial layer, the base region of the second transistor and at least a part of an external region of the first transistor being formed by coplanar portions of the second epitaxial layer and a first portion of the substrate comprising at least a part of the collector region of one of said first and second transistors, an insulating barrier separating entirely at least part of said portions of the second epitaxial layer, characterized in that at least a part of the emitter region of the other transistor comprises a second substrate portion of the opposite conductivity type adjoining and coplanar with, and forming a p-n junction with said first portion, that the insulating barrier extends from the upper surface of said second epitaxial layer down to at least the substrate and that said p-n junction comprises at least a part of a junction which extends from the lower surface of the substrate up to said insulating barrier, and that an electrode is provided on the lower surface of the substrate to connect the first and second substrate portions.

4,261,003

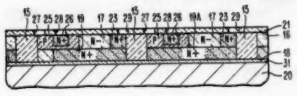
INTEGRATED CIRCUIT STRUCTURES WITH FULL DIELECTRIC ISOLATION AND A NOVEL METHOD FOR FABRICATION THEREOF

Ingrid E. Magdo, and Steven Magdo, both of Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 813,050, Jul. 5, 1977, abandoned, which is a continuation of Ser. No. 566,453, Apr. 9, 1975, abandoned, which is a division of Ser. No. 340,150, Mar. 12, 1973, Pat. No. 3,944,447. This application Mar. 9, 1979, Ser. No. 19,046

Int. Cl.³ H01L *27/12, 27/02, 29/04*

U.S. Cl. 357—49 **7 Claims**



1. An integrated circuit structure with full dielectric isolation comprising:

a supporting member including a polycrystaline supporting substrate having at least a first planar surface and a first layer of dielectric material covering said substrate on said at least first planar surface and forming a second planar surface;

a second layer on said second planar surface and forming a third planar surface; parallel to said second surface;

said second layer including a plurality of monocrystalline silicon pockets isolated from each other and laterally surrounded only by regions of oxidized silicon extending from said second planar surface through said second layer to said third planar surface, said second and third surfaces being fully planar and no portion of said supporting member extends beyond a plane defined by said second planar surface, said regions of oxidized silicon being substantially coplanar with the silicon pockets at both the second and third surfaces;

said silicon pockets including regions of one conductivity type with a relatively low conducting;

a first one of said silicon pockets having a subcollector region of one conductivity type with a relatively high conductivity fully covering the second planar surface portion within said first pocket;

a second one of said silicon pockets having a subcollector partially covering the second planar surface portion within said second pocket, the remaining portion of said second planar surface portion within said second pocket being covered by a residual portion of one conductivity type with a relatively low conductivity of said second layer;

base and emitter regions of opposite and one conductivity types, respectively, formed in said first and second pockets, the base region in said second pocket being partially formed over said residual portion of said second layer.

4,261,004

SEMICONDUCTOR DEVICE

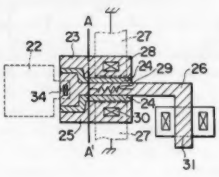
Toshiaki Masuhara, Hachioji; Osamu Minato, Kokubunji; Yoshio Sakai, Hachioji; Toshio Sasaki, Hachioji; Masaharu Kubo, Hachioji; Kotaro Nishimura, Kokubunji, and Tokumasa Yasui, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 1, 1978, Ser. No. 929,959

Claims priority, application Japan, Aug. 10, 1977, 52-95045

Int. Cl.³ H01L *27/02*

U.S. Cl. 357—51 **29 Claims**



1. A semiconductor device comprising:

a semiconductor substrate having an insulating layer disposed on one surface thereof;

a transistor to be protected provided on said substrate;

a terminal layer which is used for one of signal input and signal output to said transistor and is comprised of metal and disposed on a first portion of said insulating layer;

a first resistor layer comprised of silicon containing impurities, disposed on a second portion of said insulating layer, and having two terminals, the first of which is connected to one terminal of said transistor, and the second of which is connected to said terminal layer;

a second resistor layer comprises of silicon containing impurities, disposed on a third portion of said insulating layer, and spaced apart from said first resistor layer, wherein said second resistor layer is coupled to a source of fixed reference potential and is not coupled to said one transistor terminal and said terminal layer to which said first resistor is coupled; and

an intermediate layer comprised of silicon having conductivity characteristics different than that of said first and second resistor layers, disposed on a fourth portion of said insulating layer between said second and third portions thereof, and being contiguous with each of said first and second resistor layers wherein the conductivity characteristics of the intermediate layer are set so that said intermediate layer is an insulator which electrically insulates said first and second resistors from one another until a predetermined voltage potential between the first and second resistors across said intermediate layer is reached.

4,261,005

MINIATURE HEAT SINK

Alfred F. McCarthy, Belmount, N.H., assignor to Aavid Engineering, Inc., Laconia, N.H.

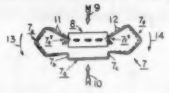
Filed Feb. 27, 1979, Ser. No. 16,325

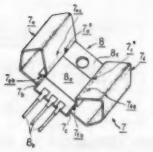
Int. Cl.³ H01L *23/02, 23/12*

U.S. Cl. 357—81 **5 Claims**

1. A unitary heat sink of relatively thin thermally-conductive material comprising an open-topped channel-shaped body portion substantially closed at the bottom and having relatively

short upstanding parallel side walls along spaced edges thereof, the tops of said side walls merging respectively with flange walls extending first outwardly in opposite lateral directions and then inwardly and upwardly to parallel spaced margins disposed slightly closer than said side walls, said spaced margins being disposed at corners of lower upwardly-slanting





portions of said flange walls and upper downwardly-slanting portions of said flange walls, said upwardly-slanting portions being disposed above said short side walls in position to engage and interfere with the upper lateral edges of an electronic semiconductor package of predetermined size when the latter is fitted within said body portion from above and through the space between said spaced margins.

4,261,006

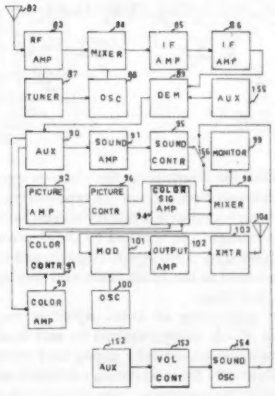
REMOTE CONTROL OF VIDEO

Morton Weintraub, 1542 47th St.; Elliot Waxman, 1825 50th St., and Bernard Gendelman, 1340 52nd St., all of Brooklyn, N.Y. 11219

Continuation-in-part of Ser. No. 911,168, Mar. 30, 1978, abandoned, which is a continuation-in-part of Ser. No. 707,855, Jul. 22, 1976, abandoned. This application Mar. 19, 1979, Ser. No. 21,554

Int. Cl.[3] H04N *9/60*

U.S. Cl. 358—3 **5 Claims**



1. Remote television channel selection and plural function control apparatus comprising:

a A tuner for receiving a composite television signal including luminance, chrominance and audio information modulated on a carrier on any one of a plurality of channels,

b. means located at said control apparatus for manually varying the channel selection of the tuner,

c. demodulator connected to said tuner for providing said luminance, chrominance and audio information in a baseband format,

d. means comprising an auxiliary jack means located subsequent of the demodulator to facilitate the addition or mixing of an auxiliary intelligence signal into the incoming signal when it is in the baseband format,

e. means comprising circuitry means connected between said auxiliary jack means and controls, whereby said circuitry means providing a simulated debth picture giving a three dimensional affect, whereby two or more picture images of a single picture are set on a single television picture tube with the said two or more picture images stemming from two or more individual transmission means being modulated by one or more image signals of a single picture, and whereby a single signal is reproduced two or more times creating thereby two or more images of a single picture signal and feeding the said two or more created images on the television screen as one and whereby delaying one image from two or more images of the same picture on the screen and whereby using pulse switching means to alternate color or amplifiers to create a variety of three dimentional affects.

f. means located at said control apparatus for manually varying the characteristics of the baseband luminance, chrominance and audio information as a function of viewer preferance,

g. means for remodulating and transmitting electromagnetically the composite television signal to a remotly located television receiver on an unused channel via wireless transmission

h. the remote control of both tuning and other receiver functions being effected without direct connection or modification to the receiver

i. a wireless coupler providing the means for separately retrieving the said auxiliary intelligence signal and reproducing the same.

4,261,007

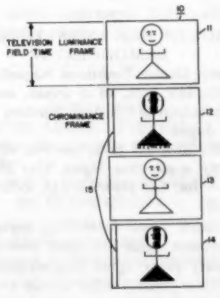
COLOR TELEVISION ENCODING AND DECODING SYSTEM

Hugh F. Frohbach, Sunnyvale; Robert E. Myers, Menlo Park; Norman A. Peppers, Belmont; Thomas L. Siwecki, Walnut Creek; Louis F. Schaefer, Palo Alto, and Albert Macovski, Menlo Park, all of Calif., assignors to Laser-File Inc., Los Angeles, Calif.

Continuation of Ser. No. 820,602, Aug. 1, 1977, abandoned. This application Jun. 4, 1979, Ser. No. 45,179

Int. Cl.[3] H04N *5/88*

U.S. Cl. 358—5 **37 Claims**



1. In a method for encoding color information onto black and white film the steps of:

exposing a first film frame to the color information to produce a luminance frame;

exposing a second film frame to the color information through a striped color filter which selectively transmits the three color primaries to produce a chrominance frame where the strips, when scanned, produce a carrier frequency lower than the standard broadcast subcarrier frequency;

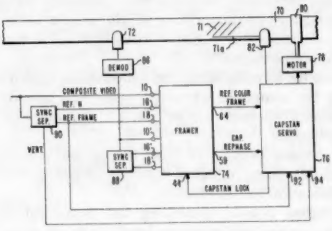
marking the second film frame with color synchronization information wholly outside of the image region having a fixed spatial relationship to the striped color filter; and

producing a sequence of exposed frames with alternate film frames representing luminance and chrominance images which are exposed in the same manner as the first and second film frames.

4,261,008
DUAL STANDARD COLOR FRAMER

Lloyd E. Waller, Pine Hill, and George S. Zorbalas, Cherry Hill, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 15, 1980, Ser. No. 112,400
Int. Cl.[3] H04N 9/46
U.S. Cl. 358—19 **8 Claims**



1. A circuit for use with first color television signals from a record and from a source of standard second signals including horizontal synchronization pulses and a color burst, said circuit comprising first and second zero crossing detecting means for sensing the direction of zero-crossing of the color burst with respect to the preceding horizontal synchronization pulse for at least two consecutive lines of said first and second signals respectively, comparison means coupled to said first and second detection means for comparing said zero crossings in said signals, a source of framing signals, and means coupled to said comparison means and said source of framing signals for shifting the phase of said framing signal by one frame if said zero-crossing are not equal.

4,261,009
VIR CONTROL OF HUE AND SATURATION IN RGB DEMODULATOR

Tetsuo Tomimoto, Osaka; Yoshitomi Nagaoka, Neyagawa, and Reiichi Sasaki, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd. Wireless Research Laboratory, Osaka, Japan

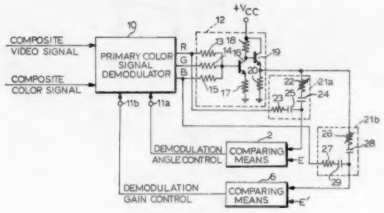
Filed May 17, 1978, Ser. No. 907,033
Claims priority, application Japan, May 20, 1977, 52-59232
Int. Cl.[3] H04N 9/535, 9/52
U.S. Cl. 358—27 **2 Claims**

1. A chrominance signal controlling apparatus for controlling the chrominance signal in a color television receiver employing a primary color signal demodulator providing only red, green and blue primary color signals at the output terminals thereof, said apparatus comprising:

a luminance signal producing means for forming a luminance signal by mixing said red, green and blue primary color signals in substantially the ratio

$A_R\sin(\theta_R-\theta_G)\sin(\theta_R-\theta_B)$:
$A_G\sin(\theta_G-\theta_B)\sin(\theta_G-\theta_R)$:$A_B\sin(\theta_B-\theta_R)\sin(\theta_B-\theta_G)$

respectively, where A_R, A_G and A_B are the respective red, green and blue relative demodulation gains of the primary color signal demodulator and θ_R, θ_G and θ_B are the respective red, green and blue demodulation angles of the primary color signal demodulator;



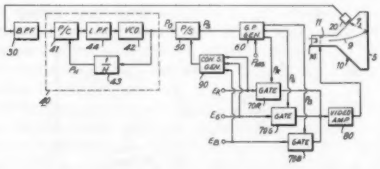
a subtracting means connected to said luminance signal producing means for producing a difference signal between one of the primary color signals and said luminance signal; and

a comparing means connected to said subtracting means for comparing the level of said difference signal with a predetermined reference level for producing a control signal for controlling the chrominance signal level and/or the phase of a carrier wave by keeping the level of said difference signal equal to said reference level.

4,261,010
BEAM INDEX COLOR TELEVISION RECEIVER APPARATUS

Katsuo Isono, Kawagoe, and Tomoyoshi Imayasu, Urawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 27, 1979, Ser. No. 97,869
Claims priority, application Japan, Dec. 5, 1978, 53-150731
Int. Cl.[3] H04N 9/24
U.S. Cl. 358—67 **13 Claims**



1. Apparatus for controlling the electron beam in a beam index color television receiver of the type having a cathode ray tube which is provided with a display screen having beamexcitable color elements to be scanned by the electron beam as the beam is modulated by color control signals, and index elements which are scanned as the beam scans said display screen, said apparatus comprising:

means for generating an index signal in response to the scanning of said index elements by said beam;

gating means for sequentially gating said color control signals individually for modulating said electron beam as said beam scans the respective ones of said color elements;

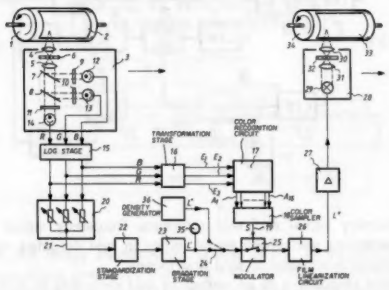
means for generating gating pulses in response to said index signal and for supplying said gating pulses to said gating means so as to cause the latter to gate said color control signals; and

phase control means for controlling the phase of said gating pulses in response to the level of said color control signals.

4,261,011
COLOR SEPARATION PRODUCTION USING COLOR RECOGNITION CIRCUIT

Hans-Georg Knop, Heikendorf, Fed. Rep. of Germany, assignor to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Filed Dec. 11, 1979, Ser. No. 102,542
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1978, 2853511
Int. Cl.³ G03F *3/08*
U.S. Cl. 358—75 **13 Claims**



1. A method for the production of color separations for textiles, decoration or packaging printing and the like in which a colored pattern model is trichromatically scanned point-by-point and line-by-line for obtaining color signals, and is then recorded again, comprising the steps of:

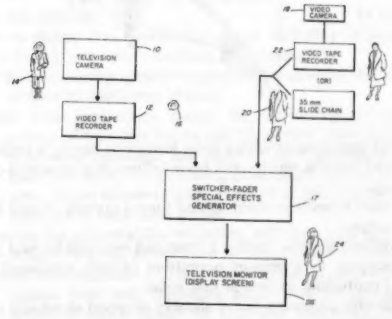
producing a first signal from the color signals in response to the presence of at least one color of the pattern model by color recognition;

producing a second signal determining the recording density which is to be recorded; and generating from the first and second signals a color separation signal for controlling the recording of a specific color.

4,261,012
SYSTEM AND METHOD FOR COMPOSITE DISPLAY

Laurence G. Maloomian, 28 Crystal Hill Ter., Westwood, Mass. 02090

Filed Jun. 18, 1979, Ser. No. 49,819
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—93 **15 Claims**



1. A system for displaying a full figure composite display of two separate images which comprises:

means to record in an ambient environment as a first image a portion of a consumer's body;

means to record as a second image at least a portion of an article of clothing;

means to combine said images in adjacent relationship as a full figure composite display;

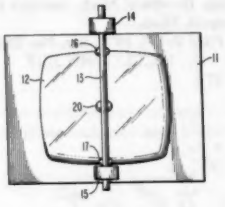
means to display said composite; and,

means to proportion one image with respect to the other which includes means to vary separately one of the images along either a horizontal axis or a vertical axis or both whereby a fully proportioned full figure composite is displayed.

4,261,013
KINESCOPE SCREEN CENTER LOCATOR

Marinus Van Renseen, Leola, and Myron H. Wardell, Jr., Lititz, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 27, 1979, Ser. No. 107,588
Int. Cl.³ H04N *7/02;* H01J *9/42, 29/54*
U.S. Cl. 358—139 **5 Claims**



1. Locator apparatus for use with a kinescope, said kinescope having a front panel and including a phosphorescent display screen deposited on an interior surface of said front panel, and a coating of reflective material exhibiting reflective characteristics different than said display screen, said coating overlying said display screen and overlapping said display screen at the edges thereof; said locator apparatus comprising:

means for directing a beam of light toward said front panel along a first light path intersecting a region of said interior surface in the vicinity of one of said edges;

means for detecting light returned from said intersected region along a second light path of a given orientation with respect to said first light path;

means for conjointly moving said beam directing means and said light detecting means in a direction substantially perpendicular to said one edge in such a manner as to cause said region of intersection to traverse said one edge; and

means responsive to the output of said light detecting means for providing an indication of changes in the magnitude of light returned along said second light path during said traversal of said one edge.

4,261,014
SPOT ARREST SYSTEM

Ronald B. Lee, Skokie, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Dec. 3, 1979, Ser. No. 99,372
Int. Cl.³ H04N *5/14*
U.S. Cl. 358—166 **25 Claims**

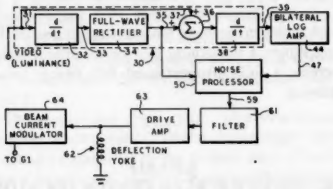
12. A spot arrest system comprising:

means for generating rectified first derivative type image enhancement signals from video signals applied thereto;

means coupled to said generating means for tending to equalize the amplitude of said image enhancement signals for different non-zero transition levels;

a gated noise coring circuit coupled to receive compressed

image enhancement signals from said equalizing means; and



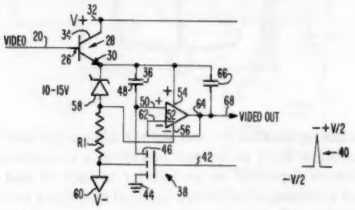
means for coupling an output signal from said coring circuit to a cathode ray tube and for modulating its scan speed in accordance with said output signal.

4,261,015

VIDEO CLAMP

Housan Dakroub, Dearborn, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jul. 9, 1979, Ser. No. 55,968
Int. Cl.³ H04N 5/18
U.S. Cl. 358—172 **8 Claims**



1. A video clamp for removing a DC offset voltage component from a video signal in an image capture data system comprising:

means for generating an input signal having an AC and DC component;

first means for accumulating the DC component and for transmitting the AC component of the input signal;

means, responsive to the input signal generating means, for discharging the first accumulating means, the discharging means having virtually infinite impedence to current flow during nondischarge of the first accumulating means;

an operational amplifier to accurately reproduce a DC voltage and to amplify the AC component of the input signal;

means for biasing the operational amplifier with a constant DC voltage level difference, each DC voltage level having superimposed thereon the AC component of the input signal; and

second means, cooperative with the operational amplifier, for accumulating the DC component and for transmitting the AC component of the input signal.

4,261,016

TELEVISION RECEIVER

Masayuki Hongu, Kawasaki, and Masaharu Tokuhara, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 14, 1979, Ser. No. 38,944
Claims priority, application Japan, May 18, 1978, 53-59179
Int. Cl.³ H04N 5/50
U.S. Cl. 358—195.1 **8 Claims**

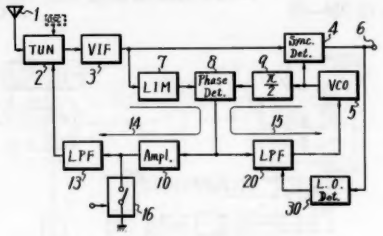
3. A television receiver for receiving a television signal and for producing at least a video signal therefrom, comprising:

first means including a local oscillator for automatically fine tuning said television signal and for producing therefrom a video intermediate frequency signal;

means including a reference oscillator and a low pass filter for producing a reference frequency signal;

said low pass filter having first and second different selectable time constants;

detecting means responsive to said video intermediate frequency signal and said reference frequency signal for detecting said video signal, wherein said detected video signal is supplied to said first means;



means responsive to an output of said detecting means for selecting one of said first and second selectable time constants; and

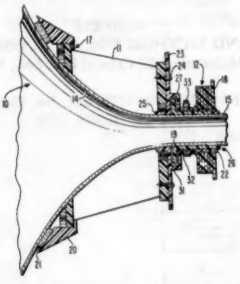
means for preventing said detected video signal from being supplied to said first means.

4,261,017

ELECTRON BEAM INFLUENCING APPARATUS

Tom W. Branton, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 27, 1979, Ser. No. 107,589
Int. Cl.³ H04N 5/645
U.S. Cl. 358—248 **3 Claims**



1. In combination with a color kinescope having a neck and a funnel portion, an electron beam influencing apparatus comprising:

a yoke support secured to said funnel portion of said kinescope;

a deflection yoke having a front end received by said yoke support in a manner permitting pivotal, rotational and longitudinal motion of said yoke;

a flexible mounting sleeve slidably disposed along said kinescope neck;

an annular magnetic beam convergence structure secured to said sleeve;

a flexible yoke mounting collar mounted to the back of said yoke; said collar embracing a portion of said sleeve in a manner allowing independent rotational movement of said collar with respect to said sleeve while assuring dependent

movement of said sleeve in response to longitudinal movement of said yoke along said kinescope neck; and

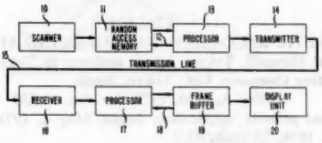
a clamp, disposed about said collar, for selectively fixing the positions of said yoke and said beam convergence structure on said kinescope neck.

4,261,018

PROGRESSIVE IMAGE TRANSMISSION

Kenneth C. Knowlton, Plainfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 18, 1979, Ser. No. 49,417
Int. Cl.³ H04N *1/00*; G01T *1/29*
U.S. Cl. 358—263 **9 Claims**



1. An image transmission system (FIG. 1) including at a transmitting terminal a scanning and digitizing device (10), an addressable memory (11) for storing binary values corresponding to each picture element in an image to be transmitted and a signal processor (13) characterized in that

the processor (13) at said terminal first encodes cells of binary values provided to said memory (11) by said scanning device (10) representing basic image areas of uniform size and shape according to the number of picture elements of a predetermined binary kind therein and next forms a multilevel hierarchical tree with nodal values derived from a comparison of pairs of such values on lower levels until a single value on the top level is reached according to whether the members of a pair being compared are both black, both white or mixed, each nodal value representing the shade of an equal-area subdivision for each level of said tree.

4,261,019

COMPATIBLE DIGITAL MAGNETIC RECORDING SYSTEM

S. Barry McClelland, Woodland Hills, Calif., assignor to Micropolis Corporation, Canoga Park, Calif.

Filed Nov. 29, 1979, Ser. No. 98,381
Int. Cl.³ G11B *5/09*
U.S. Cl. 360—40 **14 Claims**

1. A digital data processing system including compatible high density magnetic recording, comprising:

a data processing apparatus operating with eight bit "bytes" or four bit half-bytes of data;

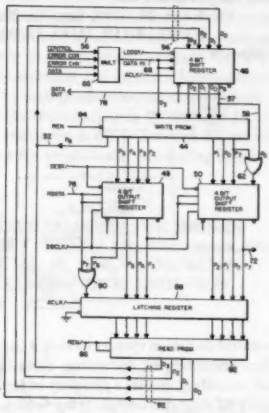
first logic conversion means for converting successive groups of four data bits or one "half-byte" from said data processing apparatus into eight bit code groups, with at least two binary 0's separating each binary 1 in the continuous output stream of code bits, and at least one binary 1 included in each code group;

means for magnetically recording said code bits, with said binary 1's being represented by magnetic flux reversals;

phase lock oscillator circuit means coupled to receive digital signals from said recording means and for generating timing or clock signals for said data processing system, said oscillator having the capability of maintaining synchronization with said code signals upon receipt of at least one binary 1 during each eight bit code interval;

second logic conversion means for decoding said eight bit code groups and forming four bit data groups; and

means for coupling both of said logic conversion means substantially directly with said data processing circuitry; whereby extensive buffering between said code groups and the eight digit bytes processed in said data processing



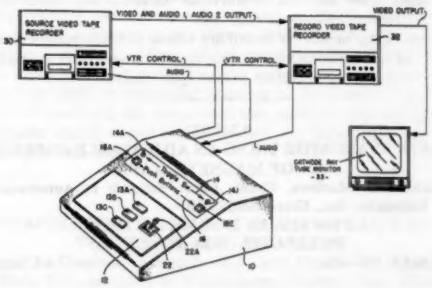
apparatus is not required, and the need for a tightly controlled special phase lock oscillator is avoided.

4,261,020

CONTINUOUS SPEED CONTROL SYSTEM FOR VIDEO TAPE RECORDER

Gary H. Beeson, and George W. Bates, both of Santa Ana, Calif., assignors to Convergence Corporation, Irvine, Calif.

Filed Aug. 6, 1979, Ser. No. 63,937
Int. Cl.³ G11B *15/46*
U.S. Cl. 360—73 **4 Claims**

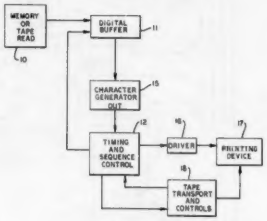


1. A control system for providing a continuously variable speed control for a video tape recorder, which recorder is designed to operate at discrete speeds and which is responsive to a speed control signal having first and second levels to operate at a first selected speed when the speed control signal is established at the first level, and at a second selected speed when the speed control signal is established at a second level, and said control system comprising: digitizing means responsive to an applied analog input signal for producing output pulses having durations dependent upon the value of the analog input signal; and circuit means coupled to said digitizing means and responsive to the output pulses therefrom for causing said speed control signal to be switched between said first and second levels at a rate determined by the durations of said output pulses.

4,261,021
CASSETTE LABELING APPARATUS

Theodore Titus, IV, Tucker, Ga., assignor to Lanier Business Products, Inc., Atlanta, Ga.

Filed Apr. 16, 1979, Ser. No. 30,551
Int. Cl.[3] G11B *23/40, 31/00*
U.S. Cl. 360—79 **9 Claims**



1. In a central dictation system having a central control unit, at least one recorder for recording dictation on each of a plurality of recording media; a plurality of tape carriers, one of said plurality of tape carriers carrying within one of said plurality of recording media and having an outer surface at least partially enclosing said one of said plurality of recording media, indexing means for providing indexing signals relating to dictation recorded on said plurality of recording media; signal recording means for recording said indexing signals on said one of said plurality of recording media carried within said one of said plurality of tape carriers when said one of said plurality of tape carriers is in recording interrelationship with said signal recording means, playback means selectively operable for providing reproduced indexing signals corresponding to said indexing signals recorded on said one of said plurality of recording media carried within said one of said plurality of tape carriers; eject means for removing said one of said plurality of tape carriers from said recording interrelationship with said playback means; the improvement of a carrier labeling apparatus comprising:

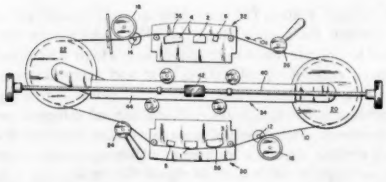
label means disposed on said outer surface of said one of said plurality of tape carriers; and

inscribing means for inscribing visible indicia characteristic of said reproduced indexing signals on said label means in response to operation of said eject means.

4,261,022
DATA EVALUATOR USING AN ADJUSTABLE ENDLESS LOOP MAGNETIC TAPE

Richard E. Marlowe, Pinole, Calif., assignor to Automation Industries, Inc., Greenwich, Conn.

Filed Mar. 19, 1979, Ser. No. 21,533
Int. Cl.[3] G11B *15/26, 19/16, 27/00*
U.S. Cl. 360—90 **6 Claims**



1. A data evaluator system comprising:

two opposed playback heads,

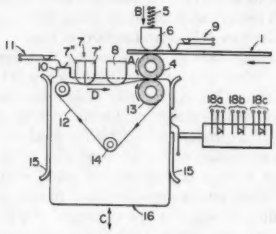
an endless magnetic tape loop which traverses an endless path around said opposed playback heads having a standard signal recording position and a test signal recording position substantially physically opposed to each other, and

a synchronizing mechanism which physically, simultaneously positions the standard signal recording position on one opposed playback head and the test signal recording position on the other playback head whereby said opposed playback heads simultaneously traverse said standard signal recording position and said test signal recording position.

4,261,023
MAGNETIC RECORDING REPRODUCING APPARATUS

Hideaki Hayashi, Tokyo, Japan, assignor to Tokyo Magnetic Printing Company, Ltd., Tokyo, Japan

Filed Apr. 16, 1979, Ser. No. 30,559
Claims priority, application Japan, May 1, 1978, 53-55960; Dec. 1, 1978, 53-166620[U]
Int. Cl.[3] G11B *5/00, 25/04*
U.S. Cl. 360—94 **5 Claims**

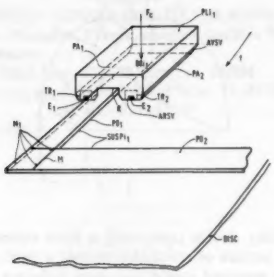


1. A magnetic recording reproducing apparatus comprises a station into which a magnetic card is to be inserted, a station into which a pack housing an endless recording medium is to be inserted, and a control circuit, said magnetic card inserting station having provided therewith a magnetic card driving means for transporting a magnetic card when inserted thereinto, a magnetic card reproducing means for reproducing the contents, information or data recorded in said card and a first switching means adapted to be automatically actuated by inserting said magnetic card into said magnetic card inserting station, said pack inserting station having provided therewith a driving means for transporting said endless recording medium, a recording means for receiving the reproduced information from said magnetic card reproducing means and recording them on said endless recording medium, a reproducing means for reproducing the information recorded on said endless recording medium and a second switching means adapted to be automatically actuated by inserting said pack into said pack inserting station, and said control circuit being arranged so that at least said magnetic card driving means and said magnetic card reproducing means may be energized when only said first switching means is actuated, said magnetic card driving means, said magnetic card reproducing means, said endless recording medium driving means, said recording means and said endless recording medium reproducing means may be energized, whereby the information recorded in said magnetic card is transferred to said endless recording medium and the transferred information is reproduced from said endless recording medium, when said first and second switching means are actuated, and said endless recording medium driving means and said endless recording medium reproducing means may be energized when only said second switching means is actuated.

4,261,024
TRANSDUCER PLATFORM

Jacques Desserre, Rambouillet, France, assignor to Compagnie Internationale pour l-Informatique Cii-Honeywell Bull (Societe Anonyme), Paris, France

Filed May 10, 1979, Ser. No. 37,725
Claims priority, application France, May 26, 1978, 78 15765
Int. Cl.³ G11B *21/16, 5/48, 5/60*
U.S. Cl. 360—103 **11 Claims**

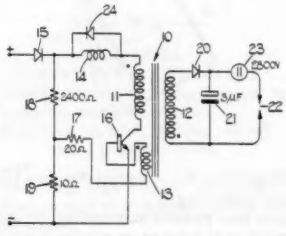


1. A platform adapted to be supported by a carrier arm for positioning the platform adjacent a moving data carrier, the platform and moving data carrier having air bearing spacing therebetween, comprising a main body having a lower face and an upper face, at least one transducer for reading and/or recording on the data carrier, said transducer being supported on the lower face of the main body and arranged to face the data carriers and suspension means for carrying said platform, said suspension means being connected to said lower face of the main body, and said lower face includes a plurality of longitudinal rails, at least one bleed slot disposed between said longitudinal rails and said suspension means being fixed in said bleed slot.

4,261,025
SPARK DISCHARGE IGNITION SYSTEMS FOR GAS TURBINE ENGINES

Henry J. Chafer, Hemel Hempstead, and Anthony J. Purkiss, High Wycombe, both of England, assignors to Lucas Industries Limited, Birmingham, England

Continuation-in-part of Ser. No. 744,754, Nov. 24, 1976, abandoned. This application Oct. 5, 1979, Ser. No. 82,052
Claims priority, application United Kingdom, Dec. 3, 1975, 49593/75
Int. Cl.³ F23Q *3/00*; F02P *3/06*
U.S. Cl. 361—257 **4 Claims**

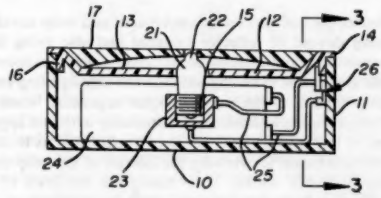


1. A spark ignition system comprising a d.c. to d.c. converter including a transformer having a primary winding, a secondary winding and a feedback winding, a core by which said windings are linked said core having an air gap and being arranged to saturate when the primary current exceeds a predetermined level, a transistor connected to control the current in the primary winding of the transformer, the feedback winding being connected to the base of the transistor to provide positive feedback thereto, an inductor connected in series with the primary winding of the transformer and having an inductance significantly greater than the inductance of the primary winding when the transformer core is saturated but significantly less than the inductance of the primary winding when the transformer core is not saturated, the inductor being designed so as to be unsaturable by said predetermined current level, a diode connected across the inductor so as to maintain current flow therein when the transistor is off and means connected to the secondary winding for periodically producing sparks.

4,261,026
LIGHTED COASTER FOR DRINKS

David J. Bolha, 939 S. Schenley Ave., Youngstown, Ohio 44509

Filed May 31, 1979, Ser. No. 44,233
Int. Cl.³ F21V *33/00*; H01H *19/28*
U.S. Cl. 362—101 **1 Claim**



1. A lighted coaster comprising a base having an upstanding annular side wall, a light bulb supporting socket and a power source on said base, conductors and a switch connecting said socket and power source, an annular body member having a depending annular flange rotatably supported on said side wall, a translucent disc on said body member, said switch comprising first and second parts, said first part being positioned on said annular side wall and said second part being positioned on said depending annular flange of said annular body member and arranged for registry with said first part when said annular body member is rotated relative to said annular flange so as to move said first and second parts toward and away from one another, a light bulb in said socket positioned partially in registering openings in the centers of said body member and said transulcent disc, whereby said translucent disc and an object on said coaster are illuminated when said light bulb is lit.

4,261,027
INCANDESCENT REFLECTOR LAMP FOR RAILWAY WARNING-SIGNAL APPARATUS

Lloyd E. Chapman, Allendale, N.J., and Dennis W. Pedley, Bath, N.Y., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 22, 1979, Ser. No. 41,447
Int. Cl.³ F21M *3/14*
U.S. Cl. 362—255 **11 Claims**

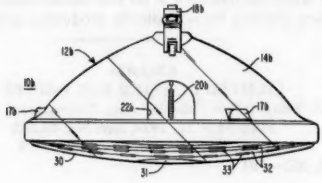
1. An electric lamp that is adapted for use as a readily replaceable light source in warning-signal apparatus of the type employed at railway crossings and the like, which apparatus includes a lamp-housing having a side-opening therein that is so oriented that it affords the engineer of an approaching train a direct view into the interior of the lamp-housing and thus provides means for visually determining whether the light source and the warning-signal apparatus are functioning properly, said electric lamp comprising;

an envelope having a concave portion and a light-transmitting portion that extends across and closes said concave portion,

means within said envelope for generating light when the electric lamp is energized,

lead-in conductor means extending into said envelope and connected to the light-generating means, and

integral reflector means associated with the concave portion of the lamp envelope comprising a material which provides a specular mirror-like surface that is disposed to intercept and reflect light rays that are produced by said light-generating means,



a selected part of the concave portion of said lamp envelope being devoid of reflector material and also being light transmitting and thereby constituting a window-aperture that is adapted to be aligned with the side-opening in the lamp-housing of the warning-signal apparatus, when the electric lamp is in assembled relationship with said apparatus, so that said window-aperture by virtue of its location provides means for viewing the interior of the lamp envelope and thus visually determining the condition of the light-generating means therein when the electric lamp is in use within the energized warning-signal apparatus.

4,261,028

LUMINAIRES

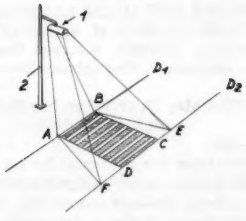
Marie H. H. Adam, Le Moulin, Lorey 54290 Bayon, France

Filed Sep. 21, 1978, Ser. No. 944,375

Claims priority, application France, Oct. 7, 1977, 77 30202

Int. Cl.[3] **F21S** *3/10;* **F21V** *11/02*

U.S. Cl. 362—279 **6 Claims**



1. A street lightening luminair comprising an elongated semi-cylindrical reflector of parabolic cross-section having opposite ends and an axis extending between said opposite ends; and paralumens arranged to obtain a luminous beam whose divergence with respect to a plane normal to said axis varies from one to the other end of said reflector to thus obtain on the street a lightened area of rectangular cross-section.

4,261,029

LIGHTING DEVICE WITH ROTATABLE REFLECTOR

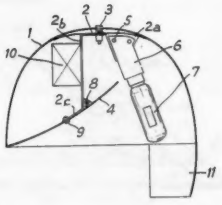
Noël Mousset, Les Andelys, France, assignor to Holophane S.A., Paris, France

Filed Feb. 5, 1979, Ser. No. 9,298

Claims priority, application France, Feb. 9, 1978, 78 03697

Int. Cl.[3] **F21V** *7/09*

U.S. Cl. 362—283 **5 Claims**



1. A lighting device comprising-a main concave reflector formed as a surface of revolution around a vertical axis,

a support mounted inside said main reflector for rotation about said axis,

the support comprising a lamp socket for a lamp which is eccentric with respect to said axis, whereby a maximal concentration of light is obtained in the direction opposite the eccentricity of the lamp with respect to said axis, and a support arm diametrically opposed to said socket with said support arm and said lamp socket being in a vertical diametrical plane including said axis,

a second reflector of generally convex cylindrical shape and whose generatrices are perpendicular to said vertical diametrical plane,

said second reflector being adapted for rotation with the lamp about said axis and for reflecting the light toward the direction of maximal concentration of light.

4,261,030

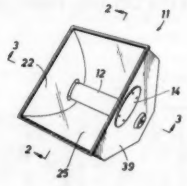
WRAP-AROUND PARABOLIC LIGHT FIXTURE AND METHOD FOR MANUFACTURE

Jose A. Hernandez, San Marcos, Tex., assignor to Esquire, Inc., New York, N.Y.

Filed Mar. 15, 1979, Ser. No. 21,269

Int. Cl.[3] **F21V** *7/00*

U.S. Cl. 362—296 **22 Claims**



1. A lighting fixture for mounting therein a lamp having an elongate axis, comprising

a housing at least partially surrounding the elongate axis of the lamp so as to leave an opening on one side thereof for light emanations, said housing having a plurality of internal planar side walls,

first reflector position stop means connected to one of said internal housing side wall,

second reflector position stop means connected to another of said internal housing side walls, and

a flexible reflector sheet having

a first edge held in position by said first reflector position stop means, and

a second edge held in position by said second reflector position stop means,

the shape of said reflector sheet being determined by the points of contact said sheet makes with said internal planar side walls between said first and second stop means.

4,261,031

RIBBED LENSES FOR HEADLAMPS

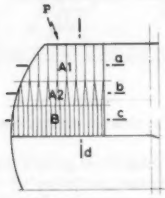
Hector Fratty, Boulogne, France, assignor to Cibie Projecteurs, Bobigny, France

Filed Mar. 6, 1979, Ser. No. 18,036

Claims priority, application France, Mar. 10, 1978, 78 06988

Int. Cl.³ F21M *3/04*

U.S. Cl. 362—336 **3 Claims**



1. In a lens for a headlamp for a motor vehicle, which lens has a surface having a series of ribs, the said ribs being formed by surfaces which appear curved when the said ribs are seen in cross-section, and adjacent ones of the said curved surfaces being separated from one another, in one zone of the said lens, by separating surfaces which, at least when seen in a cross-section transverse to the said ribs, appear flat and parallel to the general plane of the said lens, the width of the said curved surfaces varying, without discontinuity, between the said one zone of the said lens and a second zone of the said lens, with a corresponding smooth variation in the depth of the said ribs, whereby the light-spreading effect of the said ribs varies from the said one zone to the said second zone, the improvement comprising: so forming the said ribs that the thickness of the said lens, as measured at points spaced along the length of any one of the said ribs, all the said points lying at the same position on the cross-section of the said one rib, is substantially constant, while the thickness of the said lens, as measured at points on the said separating surfaces of the said lens, varies along at least a part of the length of the said ribs, whereby at least a part of the said separating surfaces cooperate with the opposite surface of the said lens to act as a prism, to deflect light passing therethrough.

4,261,032

HIGH VOLTAGE CRT SUPPLY

George A. Cavigelli, Lexington, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Nov. 13, 1978, Ser. No. 960,367

Int. Cl.² H02M *3/335*

U.S. Cl. 363—19 **1 Claim**

1. A self-oscillating, high voltage DC power supply for electronic apparatus such as a cathode-ray tube comprising:

a DC power supply;

an oscillator coil connected to said power supply;

a transistor switch connecting said coil and ground so as to provide a charging circuit for said coil;

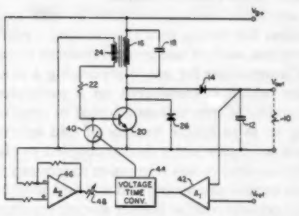
diode means connected to said coil to provide a DC output for said coil;

output filter means connected to said diode to smooth the ripple of said DC output;

a feedback coil inductively coupled to said oscillator coil and electrically coupled to said switch means, feedback resistance in series with said feedback coil and the base circuit of said transistor switch whereby said transistor switch opens upon the reaching of a predetermined level by current in said feedback resistance, resulting in oscillations at a natural frequency;

catch diode means disposed in parallel with said transistor switch to maintain the voltage across said transistor switch to a predetermined level; and

including means to control the output voltage of said high voltage power supply including means for comparing the



output voltage of said high voltage supply to a predetermined reference to produce an error signal in response to said output voltage reaching the level of said predetermined reference, and cycling means including a voltage-to-time converter responsive to said error signal for producing a brief control signal initiated in time-proportion to the magnitude of the error signal and means responsive to said control signal for operating said base drive circuit to open said transistor switch and initiate a new oscillation cycle within a natural oscillation cycle and prior to the reaching of the predetermined current level in said feedback current.

4,261,033

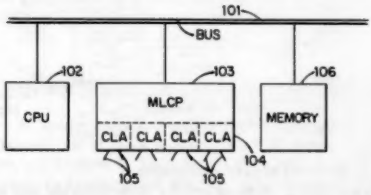
COMMUNICATIONS PROCESSOR EMPLOYING LINE-DEDICATED MEMORY TABLES FOR SUPERVISING DATA TRANSFERS

Richard A. Lemay, Bolton; Robert E. Huettner, Acton, both of Mass.; John P. Grandmaison, Hampton, N.H., and John H. Vernon, Milford, Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 19, 1977, Ser. No. 760,782

Int. Cl.³ G06F *3/04, 9/06, 13/00*

U.S. Cl. 364—200 **11 Claims**



1. A data processing system comprising a communications processor coupled to transfer information between a plurality of two-channel communication lines and a main memory included in said system, said system including a central processing unit coupled to provide control information to said processor to initiate certain information transfer operations, and at least one adapter functioning as an interface between said lines and said processor, said processor comprising:

A. auxiliary memory means including a plurality of storage sections located at first predetermined address locations

allocated to said communications lines for storing data representing a plurality of control tables, one control table for each of said lines, said control table storage sections including storage locations for information for both receive operations where information is received by said processor from said lines and for transmit operations where information is transferred to said lines from said processor, said control table storage sections further including locations for temporarily storing information to be transferred between said memory and each said line, information relating to the status of each of said adapters, control information, and pointer data for accessing a predetermined control routine;

B. additional storage sections in said auxiliary memory means for storing data representing a plurality of control routines, each of said control routines including a plurality of instructions for use in processing a stream of information which is transferred on a particular channel, said plurality of instructions adapted to control such processing so as to enable transfer of said information between said processor and a device coupled to said channel; and

C. first control means responsive to requests for service from said central processing unit and said adapters for accessing said control routine pointer storage locations in one of said control table storage sections to read the pointer data stored therein and to select a control routine in accordance with said data, said first control means further including means for executing instructions associated with said selected control routine for processing the transfer of said information between one of said channels and said processor in accordance with said control routine instructions.

4,261,034

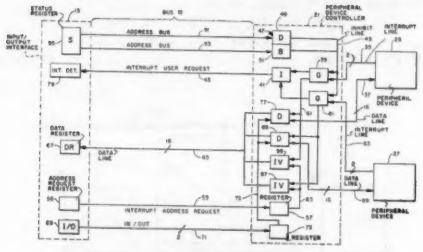
REMOTE DISTRIBUTED INTERRUPT CONTROL FOR COMPUTER PERIPHERALS

Michael L. Saccomano, Irvine; Jerry R. Washburn, Mission Viejo; Donald W. Goodrich, Irvine; Victor A. Wagner, Mission Viejo, and Phillip A. Kaufman, Saratoga, all of Calif., assignors to Computer Automation, Inc., Irvine, Calif.

Continuation of Ser. No. 866,159, Dec. 30, 1977. This application Jul. 2, 1979, Ser. No. 54,243

Int. Cl.[3] G06F *9/18*

U.S. Cl. 364—200 **18 Claims**



1. A computer system, comprising:

(A) a central processing unit for controlling the step-by-step functioning of said computer system, receiving input signals and generating output signals;

(B) an input/output interface connected to the input and output signals of said central processing unit, said interface comprising:

means responsive to said output signals of said central processing unit for generating at least a first and second dissimilar inhibit signal, and for transmitting said inhibit signals;

(C) a remote peripheral device, said peripheral device generating and transmitting a first and second class of interrupt signals for a respective first and second class of data requiring transmission to said central processing unit;

(D) a peripheral device controller connected to said remote peripheral device, said peripheral device controller also connected to said central processing unit through said input/output interface, and comprising:

(1) means for transmitting said first or second class of data requiring transmission to said central processing unit in response to receipt of either said first class or said second class of interrupt signal transmitted by said peripheral device, respectively;

(2) means responsive to either said first or second inhibit signal for selectively inhibiting said transmitting means from operating in response to receipt of either said first or second classes of interrupt signal, respectively, and

(3) said inhibiting means receptively communicating with said means for generating and transmitting first and second dissimilar inhibit signals.

4,261,035

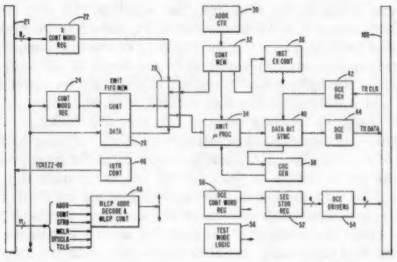
BROADBAND HIGH LEVEL DATA LINK COMMUNICATION LINE ADAPTER

James C. Raymond, Framingham, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Sep. 28, 1979, Ser. No. 79,961

Int. Cl.[3] G06F *3/00, 11/00*

U.S. Cl. 364—200 **11 Claims**



1. In a data communication system having a communication processor for generating data characters to be transmitted on a communication channel and for generating control characters indicative of control functions to be performed in transitting said data characters, an adapter for interfacing said processor to said communication channel comprising, in combination:

means for receiving and storing a control character transferred from said processor at the start of a data transmit cycle;

buffer storage means for receiving and storing data characters transferred from said processor;

processing means for transmitting data characters stored in said buffer storage means in bit-serial fashion onto said communication channel;

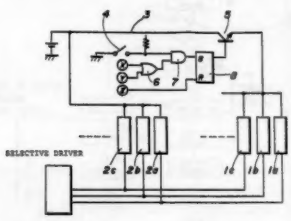
means for generating a character size control code from said stored control character; and

control means responsive to said character size control code for controlling said processing means to transmit onto said channel, for each transmitted character, a number of bits equal to the number represented by said control code.

4,261,036
RECEIPT PRINTING TIMING CONTROLLABLE ELECTRONIC CASH REGISTER

Takakazu Nagasaka, Nara; Yositaka Fukuma, Yamatokoriyama, and Daisuke Mochizuki, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 14, 1979, Ser. No. 20,425
Claims priority, application Japan, Mar. 14, 1978, 53-29560
Int. Cl.³ G06F *15/21, 3/12*
U.S. Cl. 364—405 **8 Claims**

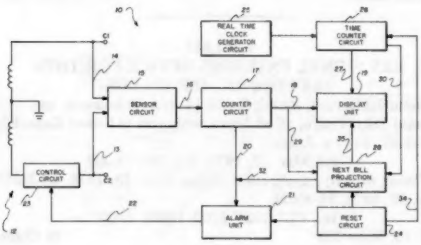


1. An electronic cash register capable of providing a receipt, comprising:
input means for introducing input data;
controlling means for permitting and prohibiting the printing and publication of said receipt according to said input data introduced by said input means; and
delay means for deferring the operation of said controlling means for a predetermined period of time following the actuation of said controlling means.

4,261,037
SYSTEM FOR MONITORING UTILITY USAGE

John R. Hicks, Irving, Tex., assignor to Dupont Energy Management Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 861,899, Dec. 19, 1977, Pat. No. 4,147,978. This application Apr. 3, 1979, Ser. No. 26,804
Int. Cl.³ G06F *15/20*; G01R *19/04*
U.S. Cl. 364—464 **32 Claims**

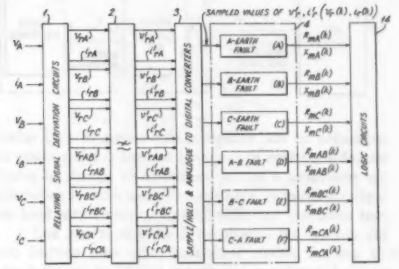


1. Electrical circuitry for monitoring the amount of electrical energy consumed by a multiple phase system, comprising:
a plurality of pulse generators, each comprising means for sensing the current flowing along a separate input bus into the system and generating a DC signal having an amplitude representative of the magnitude of the input current;
summing means for combining each of said DC signals from each of said pulse generators, including means for generating pulsed digital signals having a frequency representative of the sum of the amplitudes of said combined DC signals;
microprocessor means in communication with said summing means for processing said pulsed digital signals including means for accumulating and counting the number of pulsed digital signals during a given period of time; and
display means responsive to said counting means for displaying the pulse count during said period of time.

4,261,038
PROTECTION OF ELECTRICAL POWER SUPPLY SYSTEMS

Allan T. Johns, Corsham, and Michael A. Martin, Bradford-on-Avon, both of England, assignors to National Research Development Corporation, London, England

Filed Feb. 26, 1979, Ser. No. 15,439
Claims priority, application United Kingdom, Feb. 28, 1978, 07810/78
Int. Cl.³ G06F *15/32, 15/332*; H02H *3/26*
U.S. Cl. 364—482 **5 Claims**



1. Apparatus for detecting the occurrence of a fault in a section of an electrical power distribution system comprising:
means for measuring the instantaneous values of the voltage and current at a predetermined location;
means for calculating an approximation to the Fourier transform of a window of the actual voltage waveform over a predetermined interval of time;
means for calculating an approximation to the Fourier transform of a window of the actual current waveform over said predetermined time interval;
means for calculating an approximation to the Fourier transform of the modified current which would flow if the voltage on each side of the time interval was zero;
means for calculating the actual impedance of the section from said Fourier transforms of the actual voltage and the modified current;
means for determining whether the actual impedance of the section lies within a predetermined range of impedance values; and
means for providing a relay tripping signal when a fault condition is indicated by said determining means.

4,261,039
MICROPROCESSOR CONTROLLED POSITIONING SYSTEM

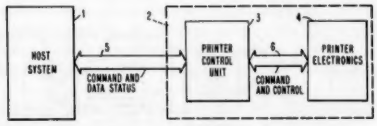
Gregory N. Baker; John E. Bateson; Earl T. Brown; Hortensia E. Delgado, all of Boca Raton; Ludwig R. Siegl, Highland Beach, and Delbert C. Thomas, Jr., Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 19, 1979, Ser. No. 86,487
Int. Cl.³ G06F *15/46*; G05B *19/19*
U.S. Cl. 364—519 **30 Claims**

9. A positioning system for a printer unit, comprising:
apparatus in said printer unit, such as a forms feed assembly or the like, said apparatus having at least one relatively movable portion therein;
first control means for providing control signals indicative of the extent of movement required of said relatively movable portion in said forms feed assembly;
second control means interconnected with said relatively

movable portion and responsive to control signals from said first control means to initiate and maintain driving movement of the relatively movable portion of said forms feed assembly at a predetermined normal driving speed during a normal driving interval until a point just prior to a stopping point as determined by said control signals and thereafter to initiate and maintain until said stopping point, a predetermined slowdown speed during a slowdown driving interval, said slowdown speed being slower than said normal driving speed;

emitter means coupled to said relatively movable portion of said forms feed assembly, said emitter means providing a first sequence of signals of relatively lower frequency



indicative of the extent of movement of said relatively movable portion during said normal driving interval and for providing a second sequence of signals of relatively higher frequency indicative of the extent of movement of said relatively movable portion of said forms feed assembly during said slowdown driving intervals, and

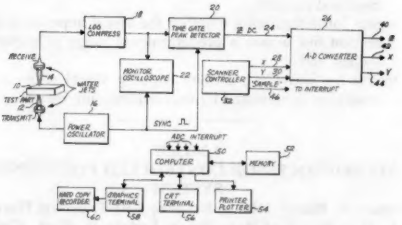
third control means associated with said second control means for utilizing said first sequence of signals from said emitter means during said normal driving interval and for utilizing said second sequence of signals during said slowdown interval to insure that said relatively movable portion of said forms feed assembly stops exactly at the stopping point required.

4,261,040

METHOD AND APPARATUS FOR THE ANALYSIS OF SCANNED DATA

Peter C. Weidman, and Wayne E. Woodmansee, both of Seattle, Wash., assignors to The Boeing Company M/S 7E-25, Seattle, Wash.

Filed Jun. 1, 1979, Ser. No. 44,721
Int. Cl.[3] H04N *1/22, 5/14*
U.S. Cl. 364—554 **9 Claims**



1. Apparatus for the testing of a material wherein a scanning transducer means produces a sequence of output signals X, Y and Z, said signals X and Y defining a structure location and said signal Z being representative of a structural parameter at said location, the improvement comprising:

memory means for storing said X, Y and Z signals;

accessing means for accessing selective ones of said X, Y and Z signals representative of a desired section of said material; and

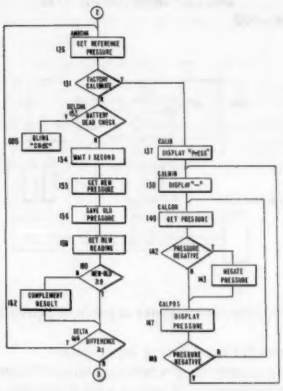
processing means for performing a predetermined statistical analysis, corresponding to the type of test being performed, on said selected signals thereby determining a characteristic of said material section.

4,261,041

METHOD AND APPARATUS FOR CONTROLLING A MICROPROCESSOR-BASED SYSTEM

Gilbert Starr, New Rochelle, N.Y., assignor to Medtek Corporation, Princeton, N.J.

Filed Aug. 6, 1979, Ser. No. 64,195
Int. Cl.[3] G06F *15/20*
U.S. Cl. 364—571 **24 Claims**



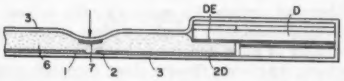
1. A microprocessor-controlled apparatus comprising microprocessor/firmware means for controlling a normal mode of operation and a factory-adjustment mode of operation, said apparatus sequencing in the two modes under control of different portions of firmware having a part in common, means for developing at least one signal indicative of the state of the apparatus for testing by said microprocessor/firmware means to control at least one firmware branch, and control means for placing the apparatus in a predetermined state in the factory so that after execution of said common firmware a branch is made to that portion of the firmware which controls sequencing of the apparatus in the factory-adjustment mode, the apparatus not entering said predetermined state during sequencing in the normal mode.

4,261,042

KEY SIGNAL ENTERING DEVICE FOR THIN ELECTRONIC APPARATUS

Masumi Ishiwatari, Zushi; Sakae Horyu, Yokohama, and Mitsuaki Seki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1979, Ser. No. 24,301
Claims priority, application Japan, Mar. 28, 1978, 53-35657; Mar. 28, 1978, 53-35658
Int. Cl.[3] G06F *1/00;* H05K *1/00*
U.S. Cl. 364—709 **16 Claims**



1. A key signal entering device for a thin electronic apparatus, comprising:

an insulating substrate;

electrodes provided on said insulating substrate;

an anisotropically conductive sheet disposed on said electrodes;

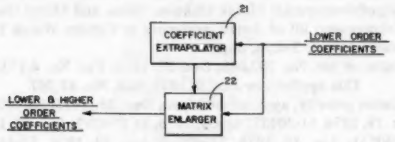
a conductive material layer disposed on said anisotropically conductive sheet; and

a key actuating area located above said electrodes.

4,261,043
COEFFICIENT EXTRAPOLATOR FOR THE HAAR, WALSH, AND HADAMARD DOMAINS

Guner S. Robinson, Los Angeles, and James J. Reis, La Palma, both of Calif., assignors to Northrop Corporation, Los Angeles, Calif.

Filed Aug. 24, 1979, Ser. No. 69,271
Int. Cl.³ G06F *15/332, 15/353;* **H04N** *7/12*
U.S. Cl. 364—725 **4 Claims**



1. In a data processing and compression system which utilizes the Haar, Walsh or Hadamard transformations to obtain lower and higher order transform coefficients, and extrapolator comprising:

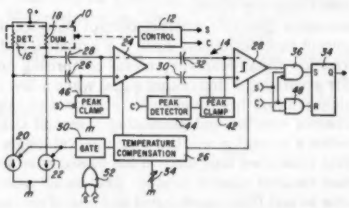
(a) coefficient extrapolator means for extrapolating the higher order transform coefficients from the lower order transform coefficients, and

(b) matrix enlarger means for combining the higher order transform coefficients, produced by the coefficient extrapolator means, with the lower order transform coefficients to produce an enlarged matrix of transform coefficients containing both lower and higher order transform coefficients.

4,261,044
TEMPERATURE COMPENSATED MAGNETIC BUBBLE MEMORY SENSE AMPLIFIER

Thomas A. Closson, Dallas; David B. Oxford, Garland; Stephen R. Schenck, McKinney, and Jerold A. Seitchik, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 5, 1979, Ser. No. 90,958
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—8 **11 Claims**



1. In combination with a magnetic bubble memory system comprising:

a magnetic bubble memory device having magnetic bubbles stored therein, a detector resistor which changes resistance in response to the movement of a magnetic bubble therebeneath, and a dummy detector; and

control means for moving the magnetic bubbles stored in the magnetic memory device beneath the detector resistor; an improved sense amplifier comprising:

current source means for providing a flow of current at a level determined by a reference voltage, through each of the resistors to develop a voltage thereacross;

amplifier means for providing an output signal proportionally greater than the voltage developed across the resistors;

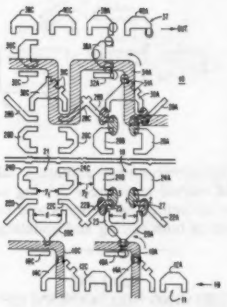
comparator means for providing a trigger signal in response to the amplifier output signal exceeding a predetermined threshold voltage; and

temperature compensation means for providing the reference voltage at a voltage determined by the temperature of the temperature compensation means.

4,261,045
MAGNETIC BUBBLE Y-BAR CORNER

Thomas W. Collins, Saratoga, and Kay B. Mehta, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,469
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—26 **10 Claims**



10. A magnetic bubble Y-bar corner for use at the end of a minor loop that contains first and second propagation elements in faced relationship and where the ends of the first minor loop element are spaced a distance Y_1 from the ends of the second minor loop element, said corner comprising

a canted I-bar having a first end forming a first magnetic pole positioned in line with the ends of the first minor loop element and having an apex portion forming a second magnetic pole,

a corner element having a shape generally defining the letter Y with first and second arms and a stem, said first arm having an end adjacent said I-bar apex portion, said first and second arm ends separated by a distance d which is sufficient to prevent bubbles from striping therebetween and which is greater than Y_1 wherein a bubble moves across the end of the first minor loop element to the first end of said I-bar and then to the apex portion of said I-bar and across to said first arm end.

4,261,046
TIMEPIECE

Tsuneyoshi Ono, and Toshimasa Ikegami, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Feb. 23, 1979, Ser. No. 14,447
Claims priority, application Japan, Feb. 23, 1978, 53-20321
Int. Cl.³ G04B *19/24, 27/00, 19/20, 3/00*
U.S. Cl. 368—35 **14 Claims**

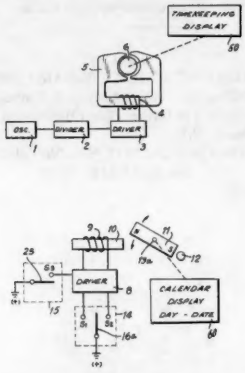
1. A timepiece for both time-keeping and calendar functions, comprising:

means for time keeping and first transducer means for driving a time display;

calendar means including at least day and date displays, said date display being formed in a ring, said day display having a day star wheel, said star wheel and said date ring being disposed with a space therebetween and including a second transducer;

means for setting said display including day and date fingers disposed in said space for selectively engaging said day and date displays when driven by said second transducer and changing said day and date displays; and

synchronizing means cooperating with said time-keeping and said calendar means for periodically coordinating the updating of said calendar displays with the time of day



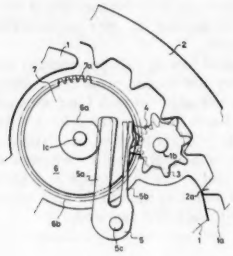
said synchronizing means actuating said second transducer, said second transducer driving said day and date fingers for updating, said fingers and said second transducer produce both setting and updating.

4,261,047

DATE DRIVING MECHANISM OF WATCH

Hideyuki Nakao, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Jun. 19, 1979, Ser. No. 49,990
Claims priority, application Japan, Jun. 27, 1978, 53/77603
Int. Cl.³ G04B *19/24, 19/20*
U.S. Cl. 368—38 **4 Claims**



1. Date driving mechanism of a watch comprising:

a date driving wheel comprising a gear portion having teeth on its entire periphery and driven by a gear train of said watch and a partially teethed portion having a selected number of teeth on its periphery.

a calendar driving wheel having teeth engaged by said teeth of said partially teethed portion to turn said calendar driving wheel a selected amount in each rotation of said date driving wheel,

a rotary calendar display member driven by said calendar driving wheel, restraining means engageable with said calendar driving wheel, normally to restrain rotation of said calendar driving wheel and movement of said calendar display member, and

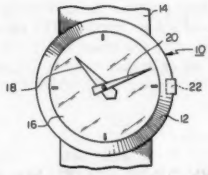
cam means rotating with said date driving wheel and cooperating with said restraining means to release said restraining means during the time said teeth of said partially teethed portion of said date driving wheel engage teeth of said calendar driving wheel to ease the movement of said calendar display member while being driven by said calendar driving wheel and thereby relieve load on said date driving wheel.

4,261,048

ANALOG QUARTZ TIMEPIECE

Jinro Motoki, Hoya; Singo Ichikawa, Sayama; Kenzi Miyasaka, Tokyo; Hiroyuki Uematsu, Kunitachi; Mitsuhiro Murata, Tokyo; Hideyuki Kawashima, Higashi-Kurume; Yuri Inoue, Higashimurayama; Masae Ohkubo, Niiza, and Mituo Oooka, Tokorozawa, all of Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Division of Ser. No. 752,648, Dec. 20, 1976, Pat. No. 4,173,863.
This application Jun. 8, 1979, Ser. No. 47,267
Claims priority, application Japan, Dec. 25, 1975, 50-159485; Mar. 19, 1976, 51-30437; Apr. 9, 1976, 51-039297; Apr. 10, 1976, 51-040531; Apr. 10, 1976, 51-40532; Apr. 19, 1976, 51-44235; Apr. 19, 1976, 51-48000[U]; Jun. 22, 1976, 51-73537; Jun. 22, 1976, 51-73538; Jun. 23, 1976, 51-74201; Sep. 14, 1976, 51-110497; Sep. 14, 1976, 51-110498; Sep. 14, 1976, 51-110499
The portion of the term of this patent subsequent to Nov. 13, 1996, has been disclaimed.
Int. Cl.³ G04C *17/00;* G04B *19/04;* G04C *9/00*
U.S. Cl. 368—69 **1 Claim**



1. An electronic timepiece having a driver circuit to drive an electro-mechanical transducer connected to time-indicating hands to display time information, comprising, in combination:

a frequency standard to provide a relatively high frequency signal; means for dividing down said relatively high frequency signal to provide

a first low frequency signal as a time unit signal and second low frequency signals higher in frequency than said first low frequency signal;

a manually operable external control member adapted to permit time correction when it is actuated; and

correction signal generating means comprising timer means for generating a first output signal when a first prescribed time interval has passed after actuation of said external control member and generating a second output signal when a second prescribed time interval longer than said first prescribed time interval has passed after actuation of said external control member, first circuit means responsive to said first output signal and one of said second low frequency signals to provide a low speed correction signal, and second circuit means responsive to said second output signal and another one of said second low frequency signals to provide a high speed correction signal;

said driver circuit being normally responsive to said time unit signal to advance said electro-mechanical transducer and accordingly said time-indicating hands at a normal speed, responsive to said low speed correction signal to cause said electro-mechanical transducer to advance said time-indicating hands at a first predetermined speed higher than normal speed to effect low speed correction of said time-indicating hands, and responsive to said high speed correction signal to cause said electro-mechanical transducer to advance said time-indicating hands at a second predetermined speed higher than said first predetermined speed to effect high speed correction of said time-indicating hands.

4,261,049

WRISTWATCH WITH SOLAR CELLS

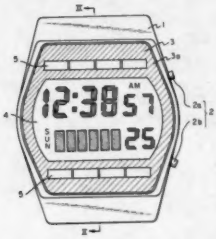
Katsuhiko Komiyama, and Toshio Hiruta, both of Tokyo, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Dec. 13, 1978, Ser. No. 969,135

Claims priority, application Japan, Dec. 20, 1977, 52/171785[U]; Dec. 21, 1977, 52/153712[U]; Jan. 9, 1978, 53/903[U]

Int. Cl.[3] **G04C** *23/02;* **G04B** *1/00;* **G04C** *17/00*

U.S. Cl. 368—88 **23 Claims**



1. A wristwatch powered by a battery and having a case, a face plate fixedly secured to said case, a module mounted in said case, and a display section disposed on said module and operatively associated with said module to display the time, the improvement comprising:

said case having a shoulder portion formed in a predetermined part thereof and extending in a radial direction of said case;

said module having a recessed part formed at an area between said display section and an inner periphery of said case;

a solar cell circuit board carrying solar cells for providing power for said watch and disposed in said recessed part of said module, and securely mounted to said shoulder portion of said case; and

means defining a window in said circuit board for accommodating said display section.

4,261,050

ELECTRONIC WATCH HAVING A STEPPING MOTOR EQUIPPED WITH AN ALARM SYSTEM

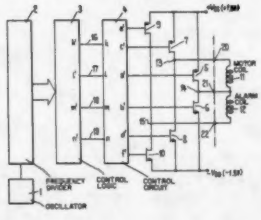
Jean-Marcel Stampfli, Le Landeron, Switzerland, assignor to Ebauches Electroniques SA, Marin, Switzerland

Filed Jun. 19, 1979, Ser. No. 50,147

Claims priority, application Switzerland, Jul. 11, 1978, 7510/78

Int. Cl.[3] **G04C** *3/00*

U.S. Cl. 368—259 **7 Claims**



1. In an electronic watch having a stepping motor, an electroacoustic alarm system, control circuits for producing motor control pulses and alarm system control pulses, with the alarm system control pulses only being produced when the motor control pulses are not present, and a drive network coupling the control circuit pulses to the stepping motor and the alarm system, the improvement wherein said drive network comprises:

first means including a plurality of power transistors for driving the stepping motor in response to the motor control pulses;

second means including a plurality of power transistors for driving the alarm system in response to the alarm system control pulses; and

said first means and said second means having at least one of said power transistors in common.

4,261,051

TIME-DIVISION-MULTIPLEXED EXCHANGER

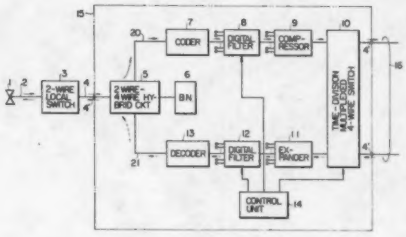
Makoto Ohnishi, Tokyo, and Hirotoshi Shirasu, Yokohama, both of Japan, assignors to Hitachi, Ltd., Japan

Filed May 25, 1979, Ser. No. 42,414

Claims priority, application Japan, Jun. 2, 1978, 53-65818

Int. Cl.[3] **H04Q** *11/04;* **H04B** *3/36*

U.S. Cl. 370—58 **4 Claims**



1. A time-division-multiplexed exchanger comprising:

a time-division-multiplexed switch for establishing interconnections between subscriber's lines;

a coder for converting voice signals from one of said subscriber's lines to pulse code modulation signals;

a decoder for converting pulse code modulation signals to voice signals to be transmitted to said one subscriber's line;

digital filters coupling the output of said coder and the input of said decoder to said time-division-multiplexed switch, respectively;

adjusting means, inserted in the output side of said respective digital filters, for adjusting the level of the pulse code modulation signals, said adjusting means having first means for receiving the output of said digital filter and for outputting plural sets of pulse code modulation signals having different signal levels with respect to each other, and second means for selecting one of said plural sets of pulse code modulation signals as the output of said adjusting means; and

control means for controlling said time-division-multiplexed switch and said second means in accordance with the selected combinations of said subscriber's lines to be interconnected.

4,261,052

INTEGRATED SWITCHING AND TRANSMISSION NETWORK

Mats A. Persson, Varby, and Arne L. Lovdin, Handen, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

PCT No. PCT/SE78/00033, § 371 Date May 1, 1979, § 102(e) Date May 1, 1979, PCT Pub. No. WO 7900138, PCT Pub. Date Mar. 22, 1979

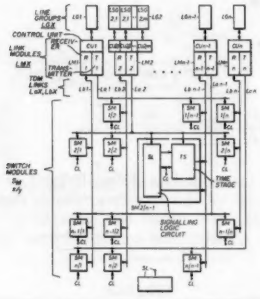
This PCT application filed May 1, 1979, Ser. No. 34,902

Int. Cl.[3] **H04Q** *11/04*

U.S. Cl. 370—59 **2 Claims**

1. In an integrated switching and transmission network comprising a plurality of line groups connected to a congestion free digital switching system comprising identical switch modules, through respective link modules each containing a transmitter and a receiver and through respective link connections each containing a first link and at least a second link for trans-

ferring in time division multiplex form digital communication informaion and signal information from the transmitter to the switching system and from the switching system to the receiver respectively, said switching system carrying out space interchanges and time interchanges to switch between arbitrary time division multiplex channels for digital information which is transferred by means of said link connections, wherein the improvement comprises that each of a first group of said modules is associated with a respective pair of said link modules and has, through said link connections, its input connected to the transmitter of one of said associated pair of link modules and its output connected to the receiver of the other of said associated pair of link modules, that each module of said first group of switch modules comprises a time stage means for carrying out time interchanges of the communication informa-



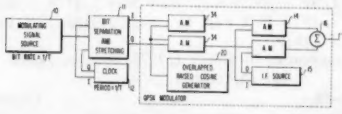
tion being switched between the associated transmitter and the associated receiver, that each module of said first group of switch modules further comprises a signalling logic means for converting signals received from the associated transmitter to operation signals which control the associated time stage, as well as to signals intended for the associated receiver, that the switching system lacks a connection between the input of one and the output of another of said switch modules, that said signalling logic means of the switch modules lack connections to any central control unit included in the switching system, and that each link module comprises a control means for establishing communication paths within the line group associated with that link module and, in cooperation with the control units of other line groups, for controlling the switching system upon establishing connections between that line group and said other line groups.

4,261,053

PSK MODULATOR WITH REDUCED ADJACENT CHANNEL INTERFERENCE

Irving Dostis, McLean; Myung-Ki Lee, Reston, both of Va., and Osamu Shimbo, Rockville, Md., assignors to Satellite Business Systems, McLean, Va.

Filed Apr. 2, 1979, Ser. No. 26,260
Int. Cl.[3] H03K *25/49;* H04L *27/20*
U.S. Cl. 375—60 **23 Claims**



1. A PSK transmitter for reducing adjacent channel interference, particularly useful in power limited applications including a high powered amplifier operating in a non-linear amplifying region, comprising:

PSK modulator means responsive to a modulation signal input for producing a PSK modulated signal,

said high powered amplifier coupled to said PSK modulated signal for increasing said signal's level, wherein the improvement comprises:

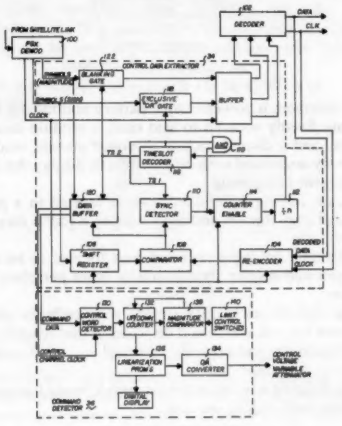
overlapped raised cosine generating means, in said PSK modulator means for producing said PSK modulated signal with a waveform of the overlapped raised cosine type.

4,261,054

REAL-TIME ADAPTIVE POWER CONTROL IN SATELLITE COMMUNICATIONS SYSTEMS

Hans Scharla-Nielsen, Palm Bay, Fla., assignor to Harris Corporation, Cleveland, Ohio

Filed Dec. 15, 1977, Ser. No. 860,990
Int. Cl.[2] H04B *7/20;* H04L *1/10*
U.S. Cl. 455—12 **10 Claims**



1. Apparatus for providing real time adaptive power control in communication systems wherein a first station communicates an information bearing signal at a selected power level to a second station via a power limited repeater, said repeater having a power output which is functionally related to power input, along transmission paths which are subject to rapid onset signal attenuation, comprising quality monitor means for determining the short term quality of the information bearing signal as received by said second station from said repeater and for providing an indication which varies substantially in real time with said determined quality of said signal, and means at said first station for adjusting said selected power level in accordance with said real time indication so as to maintain said signal quality above a preselected threshold regardless of said rapid outset signal attenuation.

4,261,055

ELECTRONIC TUNING CIRCUIT ARRANGEMENT FOR DIRECT AND INDIRECT STATION SELECTION USING A MEMORY CIRCUIT

Attilio Farina, Turin, Italy, assignor to Indesit Industria Elettrodomestici Italiana, S.p.A., Rivalta, Italy

Continuation-in-part of Ser. No. 922,882, Jul. 7, 1978, abandoned, which is a continuation of Ser. No. 738,065, Nov. 2, 1976, abandoned. This application Jun. 12, 1979, Ser. No. 47,846
Claims priority, application Italy, Nov. 17, 1975, 69823 A/75
Int. Cl.[3] H04B *1/16*
U.S. Cl. 455—158 **13 Claims**

1. An electronic tuning circuit arrangement comprising:

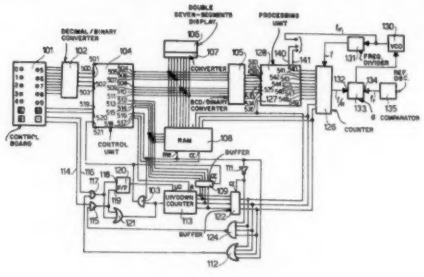
(a) a control panel (**101**) having a plurality of push-buttons or sensors;

(b) first means (**104**) actuable by at least one of said push-buttons or sensors to produce digitally coded information identifying respective ones of a plurality of tunable signals;

(c) second means (**128**) which receive said digitally coded information and correspondingly supply a respective number (N) in digital form for tuning each signal;

(d) a counter divider (**126**) connected to receive the digital output of said second means (**128**) as a divider, and a clock signal (f) derived from a voltage-controlled oscillator (**130**) as a dividend, for producing a quotient signal (f/N) representing the clock signal frequency divided by said respective number;

(e) means (**133**) for comparing said quotient signal (f/N) with a frequency reference oscillation (f_r) and producing a resultant signal which is supplied in controlling relation to said voltage-controlled oscillator (**130**) for causing said oscillator to produce a tuning signal (f_o) directly proportional to said respective number;



(f) a memory circuit (**108**) having a plurality of cells; said first means (**104**) supplying to said memory circuit (**108**), and storing in each of said cells, under the action of push-buttons or sensors of said control panel (**101**) the digitally coded information relating to each of a plurality of preferred signals preselected by the user from among said plurality of tunable signals; said first means (**104**) under the action of push-buttons or sensors of said control panel (**101**) selectively supplying to said counter divider (**126**) from said second means (**128**) only one desired respective number in digital form for the tuning of each signal, either through digitally coded information directly supplied to said second means (**128**) from said first means (**104**) or through digitally coded information supplied from said memory circuit (**108**) to said second means (**128**); and

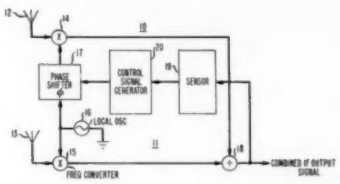
(g) third means (**113**) supplying said counter divider (**126**) from said second means (**128**) with said respective number in digital form, by sequentially scanning one after another said cells of said memory circuit (**108**) and then supplying said second means (**128**) with the stored digitally coded information obtained from each cell scanned.

4,261,056

EQUALIZING SIGNAL COMBINER

William T. Barnett; Carl W. Lundgren, Jr., both of Colts Neck; William D. Rummler, Middletown, and York Y. Wang, Ocean, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 16, 1979, Ser. No. 57,748
Int. Cl.[3] **H04B** *7/04*
U.S. Cl. 455—273 **9 Claims**



1. For use in a space diversity receiver, an equalizing signal combiner comprising:

first (**10**) and second (**11**) signal paths;

means (**18**) for combining the signals on said paths;

characterized in that said equalizing combiner further includes:

means (**19**) for measuring the power in at least two selected portions of the frequency spectrum of said combined signal; and

means (**20**), (**17**) for varying the parameters of said equalizing combiner in a manner to maintain any preselected relationship among the measured powers.

DESIGN PATENTS

GRANTED APR. 7, 1981

ERRATA

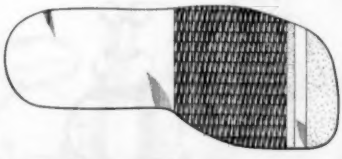
For CLASS	See PATENT NO.
D99–049	258,803
D08–394	258,804

258,770
PANTY GIRDLE
Harold Stern, Wyckoff, N.J., assignor to International Playtex, Inc., Stamford, Conn.
Filed Sep. 28, 1978, Ser. No. 946,930
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—4

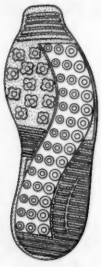
258,772
SPORT SHOE
Edward J. Norton, Topsfield, Mass., and Jonathan H. Werman, Hampton Beach, N.H., assignors to New Balance Athletic Shoe, Inc., Boston, Mass.
Filed Jun. 4, 1979, Ser. No. 45,184
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—309

258,771
SKI BOOT
Franco Vaccari, Via Paleoveneti 3/3, Montebelluna (Prov. of Treviso), Italy
Filed Jun. 26, 1978, Ser. No. 918,741
Claims priority, application Italy, Jan. 4, 1978, 20414 A/78
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—276

258,773
SHOE SOLE
Robert E. Russell, Holden, Mass., assignor to Quabaug Rubber Company, North Brookfield, Mass.
Filed Jul. 10, 1978, Ser. No. 923,043
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320



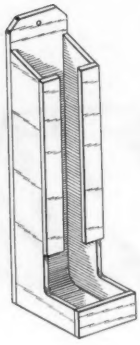
258,774
SHOE SOLE
Francis Denu, La Walk, France, assignor to Adidas Fabrique de Chaussures de Sport, France
Filed Aug. 18, 1978, Ser. No. 935,497
Claims priority, application France, Feb. 22, 1978, 78 338
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320



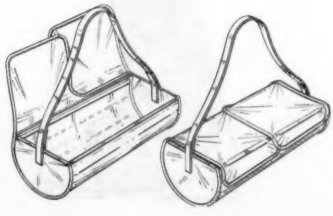
258,775
NECKTIE
Gaetano Leonardi, 452 69th St., Brooklyn, N.Y. 11220
Filed Jun. 13, 1979, Ser. No. 48,045
Term of patent 14 years
Int. Cl. D2—*05*
U.S. Cl. D2—354

258,776
COMBINED PIN CUSHION, THIMBLE HOLDER AND SCISSORS HOLDER
Barbara A. Evans, 15310 La Mancha, Houston, Tex. 77083
Filed Jun. 13, 1977, Ser. No. 805,747
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D3—21

258,777
SPOOL HOLDER
Alexander Kailey, 644 Bath St., Bristol, P.. 19007
Filed Mar. 26, 1979, Ser. No. 23,620
Term of patent 14 years
Int. Cl. D03—*99*; D06—*04*
U.S. Cl. D3—24



258,778
INFANT CARRIER
Francis R. Gauthier, 2281 Windsor Ct., Camarillo, Calif. 93010
Filed Aug. 9, 1979, Ser. No. 65,352
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D3—31

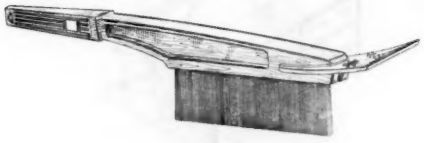


258,779

COMBINED BRUSH AND SCRAPER TO BE USED IN CLEANING WINDSHIELDS

Evan L. Hopkins, Emporia, Kans., and Donald W. Cartner, Kansas City, Mo., assignors to Hopkins Manufacturing Corporation, Emporia, Kans.

Filed Oct. 6, 1978, Ser. No. 949,108
Term of patent 14 years
Int. Cl. D4—*01;* D7—*05*
U.S. Cl. D4—06

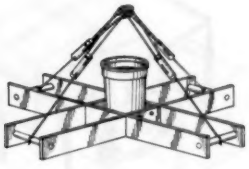


258,780

CHRISTMAS TREE STAND

Theodore L. Wasserman, 21A Cypress St., Brookline, Mass. 02139

Filed Aug. 24, 1978, Ser. No. 936,244
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—105

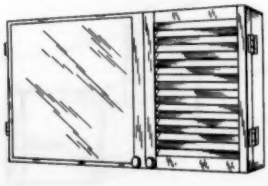


258,781

BATHROOM CABINET

Lars M. Andersson, Halmstad, Sweden, assignor to HAFA Fabriks AB, Halmstad, Sweden

Filed Nov. 29, 1978, Ser. No. 964,587
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—104

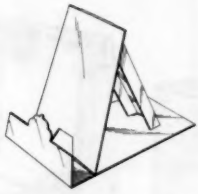


258,782

ADVERTISING DISPLAY STAND

William R. Bossons, Congleton, England, assignor to W. H. Bossons (Sales) Limited, Conleton, England

Filed Jul. 14, 1978, Ser. No. 924,876
Claims priority, application United Kingdom, Jan. 26, 1978, 983106/78
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—140

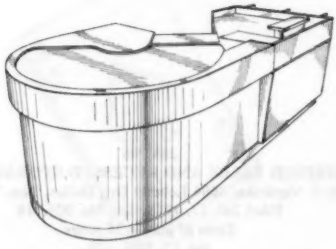


258,783

MARKET CHECK OUT STAND

Roderick J. Frederick, 1205 6th Ave. S., Seattle, Wash. 98109

Filed Apr. 28, 1978, Ser. No. 901,274
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—143

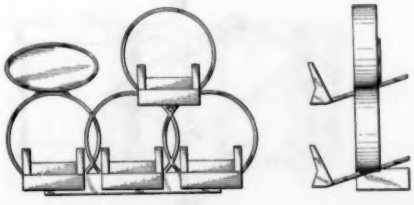


258,784

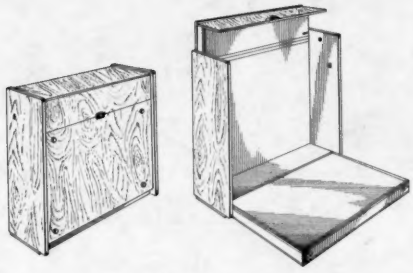
COUNTER DISPLAY STAND

Sydney Edson, East Meadow, N.Y., assignor to Howard Displays, Inc., New York, N.Y.

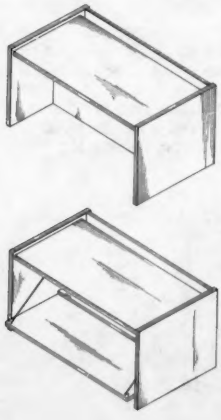
Filed Mar. 6, 1978, Ser. No. 884,032
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—157



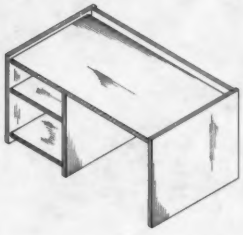
258,785
WORK-TASK SIMULATOR CABINET
James E. Hatch, and Stephen H. Lubin, both of Rochester, N.Y., assignors to The Singer Company, Stamford, Conn.
Filed Apr. 4, 1979, Ser. No. 27,118
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—167



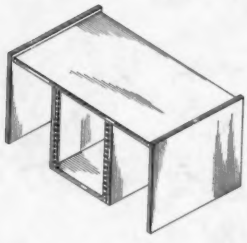
258,786
COMBINED TABLE AND RECESSED STORAGE UNIT
Joseph T. Verdesca, 5604 Lobello Dr., Dallas, Tex. 75229
Filed Jul. 17, 1978, Ser. No. 925,316
Term of patent 14 years
Int. Cl. D06—*03*
U.S. Cl. D6—179



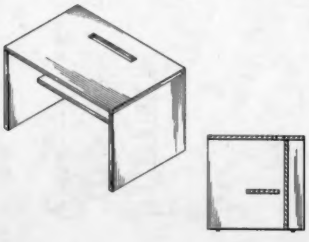
258,787
COMBINED WORK TABLE AND STORAGE SHELF UNIT
Joseph T. Verdesca, 5604 Lobello Dr., Dallas, Tex. 75229
Filed Jul. 17, 1978, Ser. No. 925,321
Term of patent 14 years
Int. Cl. D06—*03*
U.S. Cl. D6—179



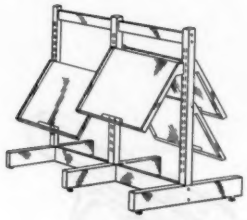
258,788
COMBINED WORK TABLE AND EQUIPMENT STORAGE UNIT
Joseph T. Verdesca, 5604 Lobello Dr., Dallas, Tex. 75229
Filed Jul. 17, 1978, Ser. No. 926,711
Term of patent 14 years
Int. Cl. D06—*03*
U.S. Cl. D6—179



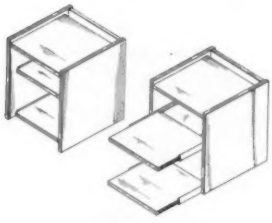
258,789
TABLE
Joseph T. Verdesca, 5604 Lobello Dr., Dallas, Tex. 75229
Filed Jul. 17, 1978, Ser. No. 926,713
Term of patent 14 years
Int. Cl. D06—*03*
U.S. Cl. D6—179



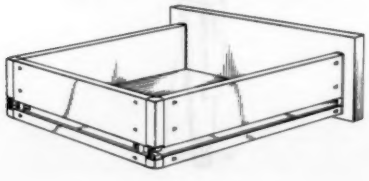
258,790
SAMPLE DISPLAY SHELVING UNIT
Ernest G. Ovitz, III, Galva, Ill., assignor to John H. Best & Sons, Inc., Atlanta, Ga.
Filed Jul. 13, 1978, Ser. No. 924,458
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—186



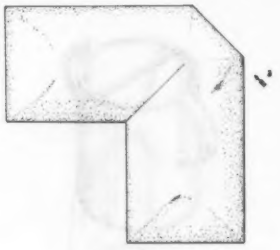
258,791
SHELF UNIT FOR STORING ELECTRICAL EQUIPMENT
Joseph T. Verdesca, 5604 Lobello Dr., Dallas, Tex. 75229
Filed Jul. 17, 1978, Ser. No. 926,712
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—186



258,792
DRAWER
Leon G. Litchfield, and Terence Hardy, both of Belper, England, assignors to L. B. (Plastics) Limited, Belper, England
Filed Jan. 27, 1978, Ser. No. 872,958
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191

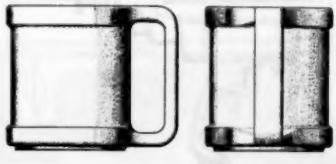


258,793
PILLOW
Gustave R. Rinz, 937 W. Maplehurst, Ferndale, Mich. 48220
Filed Jul. 20, 1978, Ser. No. 926,949
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—201

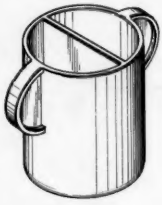


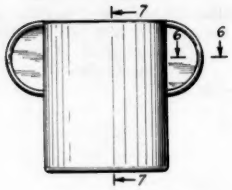
258,794
FRAMED MIRROR
Michael J. Miller, 217 Mountain Rd., Pleasantville, N.Y. 10570
Filed Jul. 27, 1978, Ser. No. 928,678
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—240

258,795
MUG
Ronald J. Zamorski, Park Hills, Ky., assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jan. 17, 1979, Ser. No. 4,085
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—9

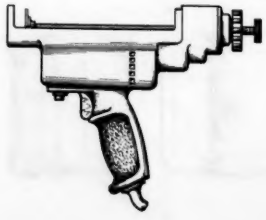


258,796
PARTITIONED CUP
Elias A. Paulides, 260 E. Walnut St., Long Beach, N.Y. 11561
Filed Apr. 30, 1979, Ser. No. 34,637
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—10





258,797
HAND HELD ELECTRIC CAULKING GUN
George B. Davis, Jr., 7512 Marbury Rd., Bethesda, Md. 20034, assignor to G. B. Davis, Jr., Bethesda, Md.
Filed Oct. 16, 1978, Ser. No. 951,836
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14.1



258,798
TREAD NIPPER OR THE LIKE
William C. Ferguson, Raleigh, N.C., assignor to Cooper Industries Inc., Houston, Tex.
Filed Jun. 5, 1978, Ser. No. 912,589
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—57

258,799
DOWEL PIN
Alfred J. Stern, 5307 Valkeith, Houston, Tex. 77096
Filed Mar. 20, 1978, Ser. No. 890,863
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—382

258,800

DISPENSING CONTAINER FOR FLUIDS

Jack Halbeisen; Peter A. Basile, both of Hudson, and Carl E. Bochmann, Brecksville, all of Ohio, assignors to The Clorox Company, Oakland, Calif.

Filed Jul. 21, 1978, Ser. No. 927,114

Term of patent 14 years

Int. Cl. D9—*01*

U.S. Cl. D9—300

258,801

BOTTLE

Paul R. Campbell, Cincinnati, Ohio, and John Pardo, Yonkers, N.Y., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 25, 1978, Ser. No. 937,028

Term of patent 14 years

Int. Cl. D9—*01*

U.S. Cl. D9—409

258,802

BOTTLE OR SIMILAR ARTICLE

Ted L. Beaver, Roselle, Ill., assignor to The Continental Group, Inc., Stamford, Conn.

Filed Jul. 10, 1978, Ser. No. 922,960

Term of patent 14 years

Int. Cl. D9—*01*

U.S. Cl. D9—378

258,803

BEVERAGE CASE

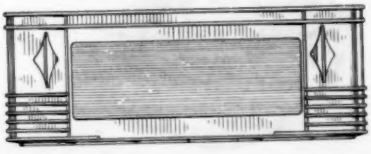
Theodor M. Box, 1108 Aileen Rd., Brielle, N.J. 08730

Filed Aug. 28, 1978, Ser. No. 937,173

Term of patent 14 years

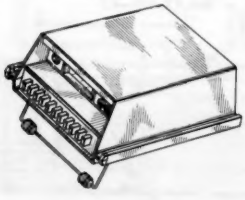
Int. Cl. D9—*03*

U.S. Cl. D99—49



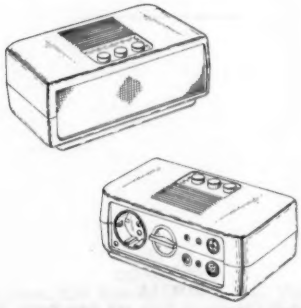
258,804
BALE TIE
George R. McCutchen, 1401 24th Ave. East, Cordele, Ga. 31015
Filed Aug. 9, 1978, Ser. No. 932,206
Term of patent 14 years
Int. Cl. D9—*06*
U.S. Cl. D8—394

258,805
DIGITAL ENGINE ANALYZER
Edwin L. Schwartz, Los Angeles, Calif., assignor to Rite Autotronics Corporation, Los Angeles, Calif.
Filed Oct. 13, 1977, Ser. No. 841,686
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—75



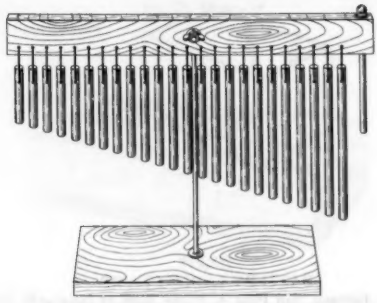
258,806
TOOTHSHAPED SAND TIMER
Ruth M. Mericle, 8455 Washington Blvd., Indianapolis, Ind. 46240, and Marjorie M. A. Mericle, 4548 Candletree Cir., Indianapolis, Ind. 46254
Filed Feb. 16, 1978, Ser. No. 878,212
Term of patent 14 years
Int. Cl. D10—*03*
U.S. Cl. D10—44

258,807
ROOM SECURITY DEVICE
Ernst Reichl, Munich, Fed. Rep. of Germany, assignor to Bosch Siemens Hausgeräte GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jul. 7, 1978, Ser. No. 922,789
Claims priority, application Fed. Rep. of Germany, Jan. 13, 1978, MR 4768
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—106

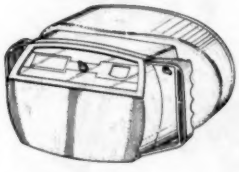


258,808
CLOCK
Stephen P. Diskin, 613 S. Ridgeley Dr., Los Angeles, Calif. 90036
Filed Aug. 31, 1978, Ser. No. 938,528
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15

258,809
SOLID BAR CHIME
Armen Halburian, 164 Dorchester Rd., River Edge, N.J. 07661
Filed Nov. 15, 1978, Ser. No. 960,783
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—116



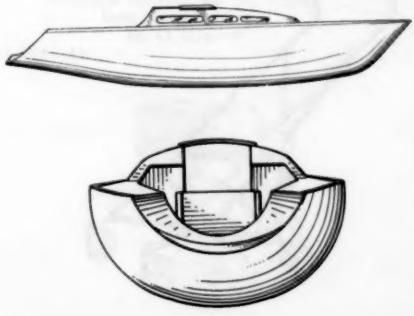
258,810
HAND HELD RADAR UNIT
Frank Beising, Bakersfield, Calif., assignor to Marine Sonics Corporation, Bakersfield, Calif.
Filed Nov. 17, 1978, Ser. No. 961,537
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—46



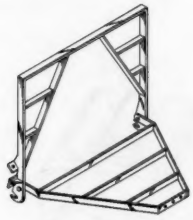
258,811
COMBINED ELECTRONIC CLOCK AND PERPETUAL CALENDAR
Chi T. You, 71-73, Pou Hsin Rd., Hsin Den Tjen, Taipei Hsien, Taiwan
Filed Nov. 28, 1978, Ser. No. 964,176
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—3

258,812
WRIST PEN HOLDER
Morris E. Cox, P.O. Box 8743, Jackson, Miss. 39204
Filed Aug. 7, 1978, Ser. No. 932,045
Term of patent 14 years
Int. Cl. D11—*01*; D02—*99*
U.S. Cl. D11—2

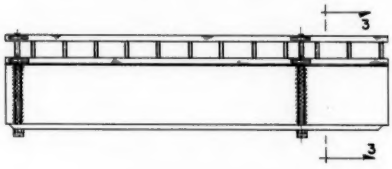
258,813
BOAT
Kevin J. McKeown, Kendal, England, assignor to Debottleneck-ing Limited, Kendal, England
Filed Jun. 21, 1977, Ser. No. 808,561
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—64



258,814
COMBINED FLUSH MOUNTED TOW BAR AND BRUSH GUARD
Harry Stewart, 924 W. Jackson St., Pasadena, Tex. 77506
Filed Feb. 6, 1978, Ser. No. 875,590
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—162

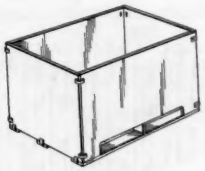


258,815
VEHICLE TIE-DOWN TRACK ASSEMBLY
Don J. Cottrell, 2164 Hawthorne La., and Don M. Cottrell, Rte. 7, Duckett Mill Rd., both of Gainesville, Ga. 30501
Filed Jun. 29, 1978, Ser. No. 920,228
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—94

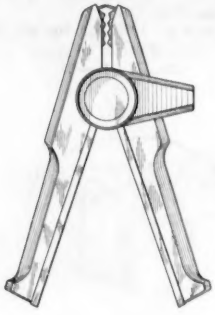


258,816
STROLLER
William G. Headley, Washington; Ralph J. Rasmussen, Brown City, and Stanley M. Richardson, Jr., Columbiaville, all of Mich., assignors to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Sep. 11, 1978, Ser. No. 941,750
Term of patent 14 years
Int. Cl. D12—*12*
U.S. Cl. D12—129

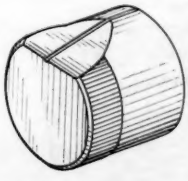
258,817
COMBINED PALLET AND CONTAINER
Nils G. Supdman, Sorred Pl. 8715, S-417 91 Goteborg, Sweden
Filed Nov. 29, 1978, Ser. No. 964,803
Term of patent 14 years
Int. Cl. D9—*08*
U.S. Cl. D12—53



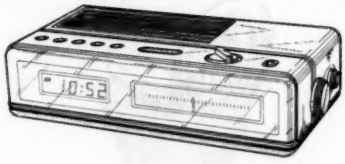
258,818
BATTERY CABLE CLAMP
Thomas Johnson, and Paul A. Witte, both of Hopewell, N.J., assignors to M. Black Manufacturing Company, Philadelphia, Pa.
Filed Jan. 2, 1979, Ser. No. 655
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D13—10



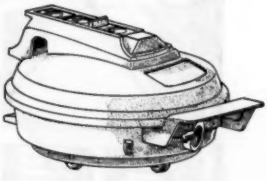
258,819
CONTROL KNOB FOR RADIO RECEIVERS OR THE LIKE
Hari Matsuda, Skokie, Ill., assignor to International Jensen Incorporated, Westchester, Ill.
Filed Nov. 13, 1978, Ser. No. 959,991
Term of patent 14 years
Int. Cl. D14—*03;* D8—*06*
U.S. Cl. D14—76



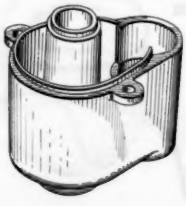
258,820
DIGITAL CLOCK RADIO
Masanori Hamada, Yao, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Continuation-in-part of Ser. No. 781,805, Mar. 28, 1977. This application May 3, 1979, Ser. No. 35,660
Claims priority, application Japan, Dec. 9, 1976, 51-48131
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—73



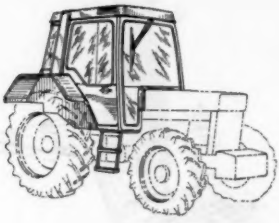
258,821
SUCTION CLEANER OR THE LIKE
Richard A. Wareham, and John D. Essex, both of North Canton, Ohio, assignors to The Hoover Company, North Canton, Ohio
Filed Oct. 23, 1978, Ser. No. 953,444
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D15—54



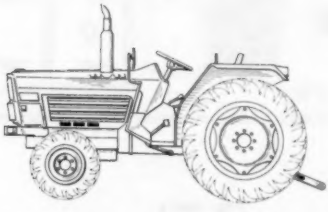
258,822
WALL PASSAGE FITTING FOR GAS OPERATED REFRIGERATOR
Sonny O. Wallgren, Ekero, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Dec. 13, 1978, Ser. No. 969,062
Claims priority, application Sweden, Jun. 14, 1978, 781512
Term of patent 14 years
Int. Cl. D15—*07*
U.S. Cl. D15—89



258,823
TRACTOR CAB
Robert A. Skyer, 1033 W. Mallard Dr., Palatine, Ill. 60067, and George E. Bowman, 4631 W. 189th St., Country Club Hills, Ill. 60477
Filed May 11, 1979, Ser. No. 37,972
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—30



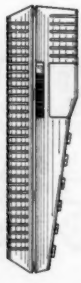
258,824
AGRICULTURAL TRACTOR
Genichi Funabashi, Sennan, Japan, assignor to Kubota, Ltd., Japan
Filed May 31, 1979, Ser. No. 44,017
Claims priority, application Japan, Dec. 1, 1978, 53-51229
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—23



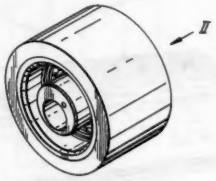
258,825
ELECTRONIC FLASH DEVICE
Peter T. Quinn, Littleton, Colo., assignor to Rollei of America, Inc., Littleton, Colo.
Filed Sep. 18, 1978, Ser. No. 943,345
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—42

258,826
POINT-OF-SALE TERMINAL
Wayne L. Aderman; Mark C. Agnew, and Frank Wilkey, Jr., all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 29, 1978, Ser. No. 947,124
Term of patent 14 years
Int. Cl. D14—*02;* D18—*01*
U.S. Cl. D18—4

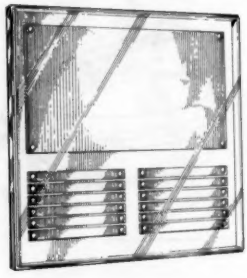
258,827
CASE FOR PRINTING CALCULATOR OR THE LIKE
Arthur W. Chin, Lubbock, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Nov. 13, 1978, Ser. No. 960,492
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7



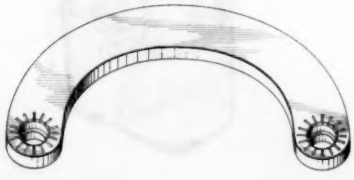
258,828
INK TRANSFER ROLLER
Roman Zrobek, Peterborough, England, assignor to Baker Perkins Holdings, Ltd., England
Filed Jan. 31, 1979, Ser. No. 8,299
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D18—22



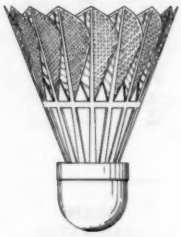
258,829
SIGN
Leslie M. Silverman, 2 Kansas St.-376, San Francisco, Calif. 94103
Filed Sep. 13, 1978, Ser. No. 942,122
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—10



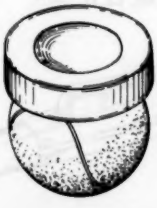
258,830
TOY BUILDING BLOCK
Bror-Helge Sigg, Glommingegrand 17, S-163 62 Spanga, Sweden
Filed Sep. 18, 1978, Ser. No. 945,050
Claims priority, application Sweden, Mar. 16, 1978, 780745
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—108



258,831
SHUTTLECOCK
Frank W. Popplewell, Saffron Walden, England, assignor to Dunlop Limited, London, England
Filed Oct. 27, 1978, Ser. No. 955,385
Claims priority, application United Kingdom, May 20, 1978, 984686/78
The portion of the term of this patent subsequent to Sep. 16, 1994, has been disclaimed.
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—207

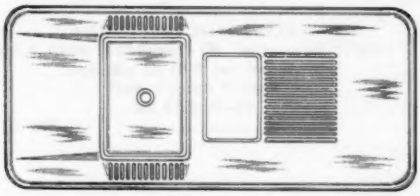


258,832
TENNIS BALL SERVING AID
Norman H. Meadows, 19 Doonkuna Ave., Camberwell, 3124, Victoria, Australia
Filed Feb. 27, 1979, Ser. No. 15,878
Claims priority, application Australia, Aug. 30, 1978, 75716
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—204

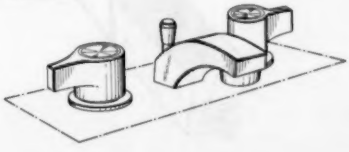


258,833
FISHING JIG WITH FIN
Hiroshi Yano, 18-17, 2-chome, Terazuka, Minami-ku, Fukuoka, Japan
Filed Oct. 4, 1977, Ser. No. 839,242
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

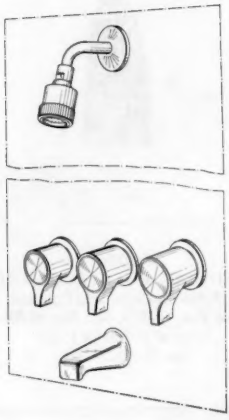
258,834
COMBINED SINK AND DRAINBOARD UNIT
Albert L. Kinsey, 10810 Burbank Dr., Potomac, Md. 20854
Filed Feb. 7, 1979, Ser. No. 10,098
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—60



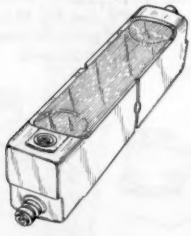
258,835
FAUCET UNIT
Dominic A. Saporito, Fanwood, and Donald M. Genaro, Haworth, both of N.J., assignors to American Standard Inc., New York, N.Y.
Division of Ser. No. 761,157, Jan. 21, 1977. This application Jul. 18, 1979, Ser. No. 58,631
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—25



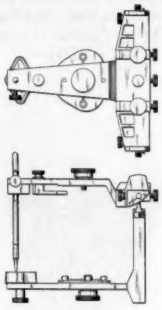
258,836
COMBINED BATHTUB AND SHOWER FIXTURE UNIT
Dominic A. Saporito, Fanwood, and Donald M. Genaro, Haworth, both of N.J., assignors to American Standard Inc., New York, N.Y.
Division of Ser. No. 761,157, Jan. 21, 1977. This application Jul. 18, 1979, Ser. No. 58,632
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—26



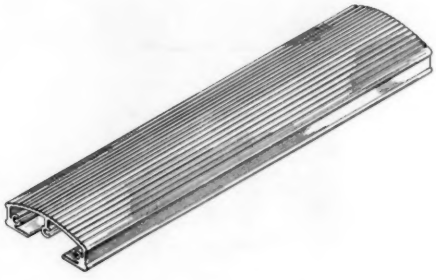
258,837
DIALYZER CARTRIDGE
Kurt Spranger, Ammerbuch-Entringen, Fed. Rep. of Germany, and Bengt Nestell, Hoellviksnaes, Sweden, assignors to Gambro Dialysatoren GmbH and Co. KG, Fed. Rep. of Germany
Filed Apr. 12, 1978, Ser. No. 895,872
Claims priority, application Sweden, Oct. 17, 1977, 772068; Oct. 17, 1977, 772070
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—21



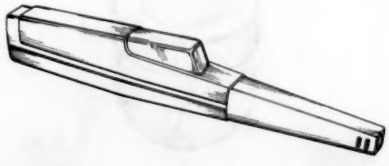
258,838
DENTAL ARTICULATOR
Robert L. Lee, 22937 Grand Ter., Colton, Calif. 92324
Filed Nov. 30, 1978, Ser. No. 965,035
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—10



258,839
LADDER STEP
Wayne R. Broyles, Elkhart, Ind., assignor to Ronald A. Minichillo, Elkhart, Ind., a part interest
Filed Aug. 30, 1978, Ser. No. 938,115
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D25—69

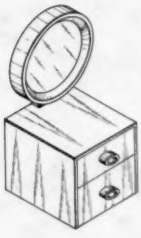


258,840
GAS-LIGHTER
Lisio Plozner, Pordenone, Italy, assignor to B.P.T.S.p.A., Cinto Caomaggiore, Italy
Filed Mar. 28, 1978, Ser. No. 891,100
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—39

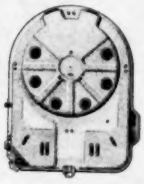


258,841
COSMETIC BOX
Alain Chevassus, Sceaux, France, assignor to Lefebure Isolants Reunis, Rungis, France
Filed Oct. 23, 1978, Ser. No. 953,780
Claims priority, application France, Apr. 24, 1978, 78 41309
The portion of the term of this patent subsequent to Aug. 5, 1994, has been disclaimed.
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—83

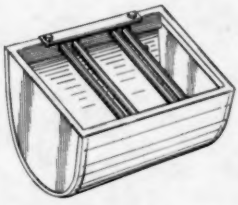
258,842
MAKEUP CENTER
John deHaseth, Whittier, Calif., assignor to Joneé, Inc., Santa Fe Springs, Calif.
Filed May 11, 1979, Ser. No. 38,238
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—68



258,843
REBREATHING APPARATUS
Louis M. Riccio, Malvern, and Frederick A. Parker, Broomall, both of Pa., assignors to Rexnord Inc., Milwaukee, Wis.
Filed Nov. 1, 1978, Ser. No. 956,541
Term of patent 14 years
Int. Cl. D29—*02, 99;* D3—*02*
U.S. Cl. D29—7



258,844
ADJUSTABLE FOAL FEEDER
Warren R. Coots, 2363 Hialeah Cir., Norco, Calif. 91760
Filed May 14, 1979, Ser. No. 38,670
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF APRIL, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. B. Dick Company: *See*—
Wachtel, Joseph; and Aguilar, Josephine, 4,260,531, Cl. 260-29.60E.

A. H. Robins Company, Inc.: *See*—
Cale, Albert D., Jr.; and Jenkins, Herndon, 4,260,606, Cl. 424-244.000.

A.R.D. Technical Assistance and Engineering Services International Anstalt: *See*—
Gabr, Saad Z. M., 4,260,163, Cl. 369-266.000.

A-T-O Inc.: *See*—
Simmonds, Milo R., 4,260,873, Cl. 219-273.000.

Aaroen, James E., to Bell Telephone Laboratories, Incorporated. Method and apparatus for detecting transmission system failures in a communications network. 4,260,859, Cl. 179-175.30R.

Aarts, Aloysius Johannes Baptist: *See*—
van Cromvoirt, Johannes A. M., 4,260,065, Cl. 215-2.000.

Aavid Engineering, Inc.: *See*—
McCarthy, Alfred F., 4,261,005, Cl. 357-81.000.

AB Volvo: *See*—
Hartelius, Nils M., 4,260,165, Cl. 277-84.000.

Abbott Laboratories: *See*—
Moore, Edwin G., 4,260,516, Cl. 252-408.000.

Abiko, Shigeo; and Kamaishi, Tadami, to Toray Industries, Inc. Waterless planographic printing plate with polysiloxane coating. 4,259,905, Cl. 101-467.000.

Ackeret, Peter, to Licinvest AG. Picture viewer. 4,259,802, Cl. 40-513.000.

Ackerman, Daniel W., to Universal Instruments Corporation. Spade terminal. 4,260,216, Cl. 339-258.00S.

Adam, Marie H. H. Luminaires. 4,261,028, Cl. 362-279.000.

Adams, Karen G.: *See*—
Anderson, Richard J.; Adams, Karen G.; and Henrick, Clive A., 4,260,633, Cl. 424-304.000.

Adell, Robert, to U.S. Product Development Company. Edge molding for vehicle doors. 4,259,812, Cl. 49-462.000.

Adnams, Geoffrey E.: *See*—
Roast, William G.; and Adnams, Geoffrey E., 4,260,357, Cl. 425-472.000.

Adolphi, Heinrich: *See*—
Baumann, Annegrit; Adolphi, Heinrich; Huber, Rolf; and Kiehs, Karl, 4,260,604, Cl. 424-200.000.

Advanced Energy Dynamics, Inc.: *See*—
Rich, Stanley R., 4,260,394, Cl. 44-1.0SR.

Aelco Corporation: *See*—
Schroeder, William, 4,260,077, Cl. 222-137.000.

Aeroquip Corporation: *See*—
Greenawalt, Thomas H.; and Kimmet, Daniel E., 4,260,184, Cl. 285-305.000.

AFA Corporation, The: *See*—
Cary, John R.; and Wesner, Walter H., 4,260,079, Cl. 222-209.000.
Rooney, Gerald A.; Kresge, Richard E.; and Miller, Jerry H., 4,260,082, Cl. 222-340.000.

AGA Aktiebolag: *See*—
Rudolphi, Kjell; and Johansson, Ingvar, 4,259,846, Cl. 62-48.000.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See*—
Bisagni, Emile R.; Averbeck, Dietrich; Moustacchi, Ethel; and Zajdela, Francois, 4,260,630, Cl. 424-283.000.

Agfa-Gevaert Aktiengesellschaft: *See*—
Hujer, Friedrich, 4,260,245, Cl. 355-40.000.
Weyde, Edith; von Konig, Anita; and Liebe, Werner, 4,260,674, Cl. 430-271.000.

Aggarwal, Sundar L.; Hargis, Ivan G.; Livigni, Russell A.; and Fabris, Hubert J., to General Tire & Rubber Company, The. Preparation of barium-alkoxide salts. 4,260,519, Cl. 252-431.00L.

Aggarwal, Sundar L.; Hargis, Ivan G.; Livigni, Russell A.; and Fabris, Hubert J., to General Tire & Rubber Company, The. Preparation of barium-alkoxide salts. 4,260,712, Cl. 526-181.000.

Aguilar, Josephine: *See*—
Wachtel, Joseph; and Aguilar, Josephine, 4,260,531, Cl. 260-29.60E.

Ahlborn, Boye; and Kwan, Joe W. M., to Canadian Patents and Development Limited. Standing bow shock electrical power generator. 4,260,927, Cl. 310-300.000.

Ahmed, Adel A. A., to RCA Corporation. Regulated current source circuits. 4,260,945, Cl. 323-316.000.

Ahmed, Adel A. A., to RCA Corporation. Current amplifier with regenerative latch switch. 4,260,955, Cl. 330-288.000.

Aida, Toshiyuki; Taguchi, Sadanori; Yuito, Isamu; Kawabe, Ushio; Yamamoto, Shigehiko; Honda, Yukio; Shibata, Norio; and Okano, Hiroshi, to Hitachi, Ltd. Electron tube cathode and method for producing the same. 4,260,665, Cl. 428-633.000.

Air Industrie: *See*—
Marchal, Paul H., 4,260,335, Cl. 417-68.000.

Air Products and Chemicals, Inc.: *See*—
Dixon, Dale D.; and Daughenbaugh, Randall J., 4,260,748, Cl. 544-106.000.
Iacoviello, John G.; and Daniels, Wiley E., 4,260,533, Cl. 260-29.6TA.

Airships International Inc.: *See*—
Roda, John W., 4,259,776, Cl. 29-423.000.

Akashi, Goro: *See*—
Shirahata, Ryuji; Kitamoto, Tatsuji; Yamada, Yasuyuki; and Akashi, Goro, 4,260,466, Cl. 204-192.00M.

Akimoto, Hiroshi: *See*—
Miyashita, Osamu; and Akimoto, Hiroshi, 4,260,608, Cl. 424-248.540.

Akimoto, Hisao: *See*—
Iida, Yoshihiro; Shigeta, Haruhiko; and Akimoto, Hisao, 4,259,859, Cl. 73-15.00A.

Akiyama, Hiroyuki; Shimoyashiki, Nobuyoshi; Hatakeyama, Hideo; and Yamamoto, Toru, to Japan Styrene Paper Corporation. Process for producing foamed polystyrene boards. 4,260,572, Cl. 264-53.000.

Aktiebolaget IRO: *See*—
Jacobsson, Kurt A. G., 4,259,851, Cl. 66-132.00T.
Jacobsson, Kurt A. G., 4,259,852, Cl. 66-132.00T.

Aktiebolaget Svenska Electromagneter: *See*—
Johansson, Sven H., 4,259,938, Cl. 123-599.000.

Akzo N.V.: *See*—
Cairns, James; Logan, Robert T.; McGarry, George; Roy, Robert G.; and Woods, Gilbert F., 4,260,605, Cl. 424-243.000.

Albert, Richard D. Selectable wavelength X-ray source, spectrometer and assay method. 4,260,885, Cl. 250-277.00R.

Albrecht, Laszlo: *See*—
Szalai, Gabor; Albrecht, Laszlo; and Szij, Peter, 4,260,042, Cl. 188-330.000.

Albright, Jay D.; Miner, Thomas G.; and Shepherd, Robert G., to American Cyanamid Company. Naphthyloxyalkylaminobenzoic acids, salts and esters thereof. 4,260,816, Cl. 562-452.000.

Albright, Jay D.: *See*—
Moran, Daniel B.; and Albright, Jay D., 4,260,755, Cl. 544-236.000.
Moran, Daniel B.; Dusza, John P.; and Albright, Jay D., 4,260,756, Cl. 544-236.000.

Alexy, Fred H.: *See*—
Morgan, C. Baird, Jr.; Alexy, Fred H.; and Geh, Robert E., 4,259,793, Cl. 36-125.000.

Allegheny Ludlum Steel Corporation: *See*—
Reen, Orville W., 4,260,418, Cl. 148-126.000.
Simmons, Richard P., 4,260,415, Cl. 75-60.000.

Allgood, Robert N., to Motorola, Inc. FET Relaxation oscillator with reduced sensitivity to supply voltage and threshold variations. 4,260,959, Cl. 331-111.000.

Allied Chemical Corporation: *See*—
Bander, John A.; Lazarus, Stanley D.; and Twilley, Ian C., 4,260,735, Cl. 528-279.000.
DeCristofaro, Nicholas J.; Levinson, Samuel; and Sexton, Peter, 4,260,666, Cl. 428-668.000.
Karsay, Bela I.; Sturtevant, Robert L.; and Gancy, Alan B., 4,260,846, Cl. 585-730.000.
Kavesh, Sheldon; and Henschel, Claude, 4,260,416, Cl. 75-125.000.
Wellslager, John A.; and Rosenberg, Susan L., 4,260,007, Cl. 164-64.000.

Alloy Surfaces Company, Inc.: *See*—
Baldi, Alfonso L., 4,260,654, Cl. 427-253.000.

Alps Electric Co., Ltd.: *See*—
Fujino, Hitoshi; and Tsutsui, Kotaroh, 4,260,866, Cl. 200-331.000.

Aluminum Company of America: *See*—
Brouwer, Nicholaas L.; and Dreinhoefer, Louis H., 4,260,566, Cl. 264-22.000.

Amaya, Mauricio, to Reliable Electric Company. Ready access closure for communication cables. 4,260,848, Cl. 174-41.000.

Ambrogi, Raymond R., to Corning Glass Works. Press forming glass articles having encapsulated material. 4,260,405, Cl. 65-42.000.

Amchem Products, Inc.: *See*—
Cassidy, John D.; and Steinbrecher, Lester, 4,260,491, Cl. 210-720.000.

Amerace Corporation: *See*—
Dieme, Hilmar K., 4,259,922, Cl. 118-500.000.

American Biltrite, Inc.: *See*—
Hanson, John G.; and Smith, Merrill M., 4,260,534, Cl. 260-31.80R.

American Can Company: *See*—
Blake, Edward W.; and Hahn, Kurt L., 4,260,310, Cl. 414-118.000.

American Cyanamid Company: *See*—
Albright, Jay D.; Miner, Thomas G.; and Shepherd, Robert G., 4,260,816, Cl. 562-452.000.
Dusza, John P., 4,260,767, Cl. 546-306.000.

Floyd, Middleton B., Jr., 4,260,805, Cl. 560-118.000.
Kazan, John; and Yu, Chen S., 4,260,815, Cl. 562-401.000.
Moran, Daniel B.; and Albright, Jay D., 4,260,755, Cl. 544-236.000.
Moran, Daniel B.; Dusza, John P.; and Albright, Jay D., 4,260,756, Cl. 544-236.000.

American Foam Latex Corporation: *See—*
Frankenberg, Carl R., 4,260,440, Cl. 156-163.000.

American Optical Corporation: *See—*
Cannon, Robert L.; and Griffin, Andrew J., 4,259,966, Cl. 128-706.000.
Cavigelli, George A., 4,261,032, Cl. 363-19.000.

American Science and Engineering, Inc.: *See—*
Annis, Martin, 4,260,898, Cl. 250-505.000.

Ametek, Inc.: *See—*
Fulop, Gabor F.; Betz, Jacob F.; Meyers, Peter V.; and Doty, Mitchell E., 4,260,427, Cl. 136-255.000.

AMF Incorporated: *See—*
Moody, Dale R., 4,260,578, Cl. 264-40.700.

AMG Industries, Inc.: *See—*
Morgan, C. Baird, Jr.; Alexy, Fred H.; and Geh, Robert E., 4,259,793, Cl. 36-125.000.

AMP Incorporated: *See—*
Ritchie, Leon T.; and Peppler, Michael S., 4,260,212, Cl. 339-97.00R.
Zell, Dale R.; and Morningstar, Leroy J., 4,260,209, Cl. 339-14.00R.

Ampco-Pittsburgh Corporation: *See—*
Edens, Walter W.; and Ingerson, Quentin F., 4,260,435, Cl. 148-32.500.

Anderson Bros. Mfg. Co.: *See—*
Stohlquist, Roger H., 4,259,827, Cl. 53-564.000.

Anderson, James M.: *See—*
Armor, Anthony F.; Darby, William L.; and Anderson, James M., 4,260,327, Cl. 415-200.000.

Anderson, John F., to Deere & Company. Hand control mechanism. 4,259,878, Cl. 74-491.000.

Anderson, Mardis V.; and Dumas, Theodore A., to Rockwell International Corporation. Radio navigation antenna system for aircraft. 4,260,992, Cl. 343-761.000.

Anderson, Raymond B., Jr.; and Jensen, Aksel S. Press assembly for powder material. 4,260,346, Cl. 425-78.000.

Anderson, Richard J.; Adams, Karen G.; and Henrick, Clive A., to Zoecon Corporation. Pesticidal esters of amino acids. 4,260,633, Cl. 424-304.000.

Anderson, Timothy J. Synthetic fuel composition. 4,260,395, Cl. 44-16.00C.

Anderton, Nicholas W. R.; Ford, Leslie J.; Kirk, Frank A.; and Oliver, Raymond, to Imperial Chemical Industries Limited. Modified fluidized bed. 4,260,734, Cl. 528-272.000.

Ando, Hiromi; Tateoka, Kiyoshi; and Hayashida, Yoshihiro, to Tokico Ltd. Fluid pressure operated servomotor. 4,259,893, Cl. 91-369.00B.

Ando, Ryo: *See—*
Suzuki, Gyoichi; Ando, Ryo; Koyama, Tatsuo; Kubodera, Shoji; and Kondo, Renichi, 4,260,414, Cl. 75-60.000.

Andruchiw, Roman. Safety closure. 4,260,067, Cl. 215-225.000.

Anemostat Products Division, Dynamics Corporation of America: *See—*
Stark, Carroll, 4,259,818, Cl. 52-208.000.

Anic S.p.A.: *See—*
D'Amico, Fabrizio; Serboki, Giancarlo; and Foti, Vincenzo, 4,260,565, Cl. 264-13.000.

Annis, Martin, to American Science and Engineering, Inc. X-ray imaging variable resolution. 4,260,898, Cl. 250-505.000.

Anthony's Manufacturing Company, Inc.: *See—*
Hochheiser, Jerome S., 4,260,876, Cl. 219-497.000.

Appleton, Arthur I. Vented plastic enclosure for arcing devices. 4,260,863, Cl. 200-144.00R.

Arai, Kenichi: *See—*
Murata, Tomoji; Shibazaki, Kenji; Arai, Kenichi; and Kitagawa, Tsuneo, 4,260,248, Cl. 355-60.000.

Arai, Kiyoyuki, to Copal Company Limited. Device for driving dot printing bars in a dot printer. 4,260,268, Cl. 400-121.000.

Arama, Stefanica; Daschievici, Stefan; Ferat, Cezar; and Turcescu, Feodor, to Institul de Cercetari si Proiectari pentru Utulaje de Constructii de Drumuri (I.C.PU.C.). Hydrostatic motor. 4,259,894, Cl. 91-487.000.

Arato, Oscar T.: *See—*
Arato, Paul T.; and Arato, Oscar T., 4,260,039, Cl. 182-164.000.

Arato, Paul T.; and Arato, Oscar T. Folding, collapsible ladder assembly. 4,260,039, Cl. 182-164.000.

Arcair Company: *See—*
Coughlin, William J.; Hoffman, Stephen A.; and Hummel, Jerry R., 4,260,867, Cl. 219-70.000.

Arendt, Klaus; Hasler, Werner; and Schaller, Karl-Heinz, to International Business Machines Corporation. Circuit arrangement for synchronizing the times of occurrence of the print hammer impact with the arrival of the print type at the print position. 4,259,903, Cl. 101-93.030.

Armitage, John D., Jr.; and Routt, Wilson M., Jr., to International Business Machines. Two slit illumination aperture. 4,260,249, Cl. 355-67.000.

Armor, Anthony F.; Darby, William L.; and Anderson, James M., to General Electric Company. Guide vane assembly for reverse flow cooled dynamoelectric machine. 4,260,327, Cl. 415-200.000.

Armstrong Cork Company: *See—*
Hemperly, William R., Jr.; and Singer, Harry A., 4,260,273, Cl. 401-48.000.
Lewis, Robert D., 4,260,390, Cl. 8-481.000.

Armstrong, David P.; Lukenbach, Elvin R.; and Verdicchio, Robert J., to Johnson & Johnson Baby Products Company. Modified rosin esters. 4,260,550, Cl. 260-410.000.

Arnold, Willi: *See—*
Pflughaupt, Rolf; Arnold, Willi; and Hellener, Gerhard, 4,260,177, Cl. 280-668.000.

Arrdal, Borje: *See—*
Ejnell, Sture; and Arrdal, Borje, 4,260,160, Cl. 273-408.000.

Asahi Glass Compamy, Limited: *See—*
Ishii, Kenichi; and Hokusho, Takayasu, 4,260,989, Cl. 343-704.000.

Asano, Hiroaki; and Maruyama, Toshio, to Toyoda Koki Kabushiki Kaisha. Grinding machine with a CBN grinding wheel. 4,259,940, Cl. 125-11.0CD.

Asano, Kiro; Tamura, Humio; Tanaka, Hiromitsu; and Enomotol, Satoru, to Kureha Kagaku Kogyo Kabushiki Kaisha. Steroid hormone-antitumor derivatives. 4,260,736, Cl. 536-5.000.

Asarco Incorporated: *See—*
Kranz, Paul J.; and Scroggins, Lloyd A., 4,260,008, Cl. 164-431.000.

Asbeck, Adolf; Pfeiffer, Hans F.; Plapper, Juergen; and Schmid, Rolf, to Henkel Kommanditgesellschaft auf Aktien. Process for the enzymatic softening of furs. 4,260,686, Cl. 435-265.000.

Aslin, Nils O. G. Pull-on device for stockings. 4,260,083, Cl. 223-111.000.

Asplundh Tree Expert Company: *See—*
Herder, Robert R., 4,260,114, Cl. 241-37.500.

Atlantic Richfield Company: *See—*
Kao, Jar-lin; and Sheng, Ming N., 4,260,814, Cl. 560-266.000.
Stover, Dennis E., 4,260,193, Cl. 299-5.000.

Atlas Copco Aktiebolag: *See—*
Carlin, Carl-Gustaf, 4,259,869, Cl. 73-761.000.

Atlas Powder Company: *See—*
Brockington, James W., 4,259,977, Cl. 137-13.000.

Atlas Tool Company: *See—*
Schaffan, Stephan J., 4,260,104, Cl. 238-10.00E.

Atsumi, Toshio; Takebayashi, Yoshiaki; Tarumi, Yuzo; and Yamamoto, Hisao, to Sumitomo Chemical Company, Limited. 5-Carbamoyl imidazoles. 4,260,774, Cl. 548-336.000.

Aubry, Claude; and Renaud, Daniel, to Thomson-CSF. Dual-band antenna with periscopic supply system. 4,260,993, Cl. 343-779.000.

Audi, Josef: *See—*
Sawatzki, Rolf; Gubelius, Heinz-G.; Heienbrock, Joachim; Halberschmidt, Friedrich; Audi, Josef; and Schwarzenberg, Norbert, 4,260,347, Cl. 425-123.000.

Austin, Ronald, to Duo-Fast Corporation. Safety assembly for a tool for driving fasteners. 4,260,092, Cl. 227-8.000.

Autologic, Inc.: *See—*
Burton, John S., 4,260,234, Cl. 354-319.000.

Automation Industries, Inc.: *See—*
Kutnyak, Thomas A., 4,259,991, Cl. 138-127.000.
Marlowe, Richard E., 4,261,022, Cl. 360-90.000.

Avco Everett Research Laboratory, Inc.: *See—*
Singh, Param I., 4,259,988, Cl. 137-812.000.

Averbeck, Dietrich: *See—*
Bisagni, Emile R.; Averbeck, Dietrich; Moustacchi, Ethel; and Zajdela, Francois, 4,260,630, Cl. 424-283.000.

Avoy, Donald R. Blood diluting method and apparatus. 4,259,952, Cl. 128-214.00D.

AVRI S.A.: *See—*
Lamaudiere, Paul F. T., 4,260,340, Cl. 417-412.000.

Axelsson, Robert, to Een-Holmgren Ortopediska AB. Anti-friction screw and nut assembly. 4,259,949, Cl. 128-77.000.

Ayers, Orval E.: *See—*
Martignoni, Pasquale; Murfree, James A.; Nappier, Henry A.; Ayers, Orval E.; and Chew, William M., 4,260,653, Cl. 427-247.000.

B.C.M.S. Engineering & Exhibitions Ltd.: *See—*
Bennett, Aubrey; Macneal, Lachlan D. C.; and Sinclair, James S., 4,260,063, Cl. 211-4.000.

B.F. Goodrich Company, The: *See—*
Cassutt, Thomas R.; Messerly, James W.; and Senderling, Ronald L., 4,260,700, Cl. 525-113.000.
Krupp, Carroll P., 4,260,183, Cl. 285-134.000.

B & G Equipment Company: *See—*
Brehm, George L., 4,260,130, Cl. 251-113.000.

Babcock & Wilcox Company, The: *See—*
Faverty, Delmar A.; and Shuck, Robert E., 4,260,265, Cl. 366-101.000.

Babuka, Robert; Emmons, William D.; Weiss, Robert L.; and Yacko, Peter, to International Business Machines Corporation. Pluggable module actuation and retention device. 4,260,210, Cl. 339-91.00R.

Bach, Walter; Blumhardt, Rainer; Fusser, Rolf; and Ruckert, Karl-Heinz, to Filterwerk Mann & Hummel GmbH. Device for electronically controlling the intake air temperature of an internal combustion engine. 4,259,936, Cl. 123-556.000.

Bader, Aviv: *See—*
Bader, Jacob; and Bader, Aviv, 4,259,754, Cl. 4-443.000.

Bader, Jacob; and Bader, Aviv. Portable bidet. 4,259,754, Cl. 4-443.000.

Bainbridge, Robert W.: *See—*
Dannels, W. Andrew; and Bainbridge, Robert W., 4,260,359, Cl. 425-543.000.

Baiocchi, Paolo; and Giani, Gian G., to Intercast Europe S.p.A. Process for the manufacture of spectacle lenses made of diglycol allyl carbonate or the like. 4,260,564, Cl. 264-2.200.

Baker, Cole H., to Intec Corporation. Wide web laser scanner flaw detection method and apparatus. 4,260,899, Cl. 250-563.000.

Baker, Eugene E.; and Carter, Ernest E., Jr., to Halliburton Company. Inflatable packer assembly with control valve. 4,260,164, Cl. 277-34.000.

Baker, Gregory N.; Bateson, John E.; Brown, Earl T.; Delgado, Hortensia E.; Siegl, Ludwig R.; and Thomas, Delbert C., Jr., to International Business Machines Corporation. Microprocessor controlled positioning system. 4,261,039, Cl. 364-519.000.

Bakker, Pieter; Kuit, Rudolf S.; and Politiek, Jarig, to U.S. Philips Corporation. Device for directing electrically charged particles towards a target. 4,260,893, Cl. 250-397.000.

Bakker, Pieter; Kuit, Rudolf S.; and Politiek, Jarig, to U.S. Philips Corporation. Method of and device for implanting ions in a target. 4,260,897, Cl. 250-492.00A.

Balbastro, Jose D. Method of playing a ball game. 4,260,154, Cl. 273-411.000.

Baldi, Alfonso L., to Alloy Surfaces Company, Inc. Smooth coating. 4,260,654, Cl. 427-253.000.

Baldwin, John J.; and Ponticello, Gerald S., to Merck & Co., Inc. Di- and tri- substituted thiazoles. 4,260,609, Cl. 424-250.000.

Balhorn, Milo G., to Besser Company. Apparatus and methods for discharging fluent material to block making machinery. 4,260,352, Cl. 425-211.000.

Balthes, Gary E.: *See*—
Minshall, Ronald H.; and Balthes, Gary E., 4,259,787, Cl. 34-201.000.

Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., to Manville Forest Products. Bulk material container. 4,260,071, Cl. 220-445.000.

Bander, John A.; Lazarus, Stanley D.; and Twilley, Ian C., to Allied Chemical Corporation. Catalytic process for preparation of polyesters. 4,260,735, Cl. 528-279.000.

Barcus-Berry, Inc.: *See*—
Crooks, Robert C., 4,260,954, Cl. 330-85.000.

Barker, Derrick P.: *See*—
Ford, Leslie J.; and Barker, Derrick P., 4,260,721, Cl. 528-272.000.

Barna, Alex J. Trouser fly. 4,259,750, Cl. 2-234.000.

Barnert, Eike; Frommelt, Wolfgang; and Zimmer, Erich, to Kernsforschungsanlage Julich GmbH. Fluidized bed reactor. 4,259,925, Cl. 118-716.000.

Barnes, Austen B. Light sensitive detection circuit. 4,260,882, Cl. 250-205.000.

Barnett, William T.; Lundgren, Carl W., Jr.; Rummler, William D.; and Wang, York Y., to Bell Telephone Laboratories, Incorporated. Equalizing signal combiner. 4,261,056, Cl. 455-273.000.

Barns, Roy W. Apparatus for continuous azeotropic processing of vegetable and protein material. 4,260,457, Cl. 202-160.000.

Barrett, Dennis P., to Lever Brothers Company. Soap-synthetic detergent tablets. 4,260,507, Cl. 252-121.000.

Barrett, Edward L. Stator for an electromagnetic transducer. 4,260,925, Cl. 310-216.000.

Bartels, James I., to Honeywell Inc. Resistive fluid detecting means. 4,259,982, Cl. 137-392.000.

Bartels, Klaus: *See*—
Hartmann, Karl; Bartels, Klaus; and Kraffert, Erich, 4,260,640, Cl. 426-516.000.

Barth, Wayne E., to Pfizer Inc. Method for increasing antibacterial effectiveness of a β-lactam antibiotic. 4,260,598, Cl. 424-114.000.

Bartmann, Wilhelm; and Konz, Elmar, to Hoechst Aktiengesellschaft. Isoquinoline derivatives. 4,260,611, Cl. 424-250.000.

Bartmann, Wilhelm; Konz, Elmar; and Kruse, Hansjorg, to Hoechst Aktiengesellschaft. Isoquinoline aldehydes. 4,260,763, Cl. 546-144.000.

Barton, Nancy K.; Greene, Carmine M.; and Rapkin, Myron C., to Miles Laboratories, Inc. Device and method for simulating bilirubin in urine. 4,260,579, Cl. 422-56.000.

Bartos, Thomas E., to Ford Motor Company. Batch desulfurization in a coreless induction furnace. 4,260,417, Cl. 75-130.00R.

BASF Aktiengesellschaft: *See*—
Baumann, Annegrit; Adolphi, Heinrich; Huber, Rolf; and Kiehs, Karl, 4,260,604, Cl. 424-200.000.
Horner, Michael; Nissen, Axel; Laurer, Peter R.; Irgang, Matthias; and Pasedach, Heinrich, 4,260,829, Cl. 568-462.000.
Jacobs, Peter; Mangold, Dietrich; and Hamprecht, Gerhard, 4,260,559, Cl. 260-513.600.
Jacobs, Peter; Hamprecht, Gerhard; and Mangold, Dietrich, 4,260,560, Cl. 260-543.00R.
Kempter, Fritz E.; Hartmann, Heinrich; and Gulbins, Erich, 4,260,697, Cl. 525-484.000.
Linhart, Friedrich; Girgensohn, Bjoern; Reissenweber, Gernot; and Hickmann, Eckhard, 4,260,562, Cl. 564-300.000.
Ohlinger, Rainer; Falkenstein, Georg; Wurmb, Rolf; and Marx, Matthias, 4,260,554, Cl. 260-453.0SP.
Perner, Johannes; Stork, Karl; and Oppenlaender, Knut, 4,260,724, Cl. 526-229.000.
Pfleger, Klaus; Zacher, Wieland; Boettcher, Klaus; Skorczyk, Ronald; Buechner, Oskar; and Mietzner, Franz G., 4,260,722, Cl. 526-68.000.
Plath, Peter; Wuerzer, Bruno; and Rohr, Wolfgang, 4,260,775, Cl. 548-362.000.
Reuther, Wolfgang; Segnitz, Adolph; Wittmann, Otto; and Schatz, Hermann, 4,260,532, Cl. 260-29.6HN.
Sliwka, Wolfgang, 4,260,515, Cl. 252-316.000.
Staiger, Gerhard; Jaggard, James F. R.; and Schneider, Paul, 4,260,710, Cl. 526-142.000.

Baston, Trevor A. J.; and Wynne, John R., to Lucas Industries Limited. Drive arrangement for lift control surfaces on all aircraft wings. 4,260,121, Cl. 244-213.000.

Bates, George W.: *See*—
Beeson, Gary H.; and Bates, George W., 4,261,020, Cl. 360-73.000.

Bates, Mitchell G. Blind spot detector for vehicles. 4,260,980, Cl. 340-32.000.

Bates, Ronald F.: *See*—
Wang, Chih C.; and Bates, Ronald F., 4,260,647, Cl. 427-40.000.

Bateson, John E.: *See*—
Baker, Gregory N.; Bateson, John E.; Brown, Earl T.; Delgado, Hortensia E.; Siegl, Ludwig R.; and Thomas, Delbert C., Jr., 4,261,039, Cl. 364-519.000.

Bauer, Donald J.: *See*—
Eichbaum, Barlane R.; Eisele, Judith A.; and Bauer, Donald J., 4,260,589, Cl. 423-123.000.

Bauer, Fritz: *See*—
Dost, Gunter; and Bauer, Fritz, 4,260,631, Cl. 424-283.000:

Bauer, Hans F., to Occidental Research Corporation. Removal of particulates from pyrolytic oil. 4,260,473, Cl. 208-14.000.

Bauer, Peter. Fluidic oscillator with resonant inertance and dynamic compliance circuit. 4,260,106, Cl. 239-11.000.

Bauer, Theodor, to Daimler-Benz Aktiengesellschaft. Hoop arrangement for foldable tops of automotive vehicles. 4,260,188, Cl. 296-107.000.

Bauman, Robert A., to Colgate-Palmolive Company. Methanesulfonamides as antistatic agents for laundered fabrics. 4,260,497, Cl. 252-8.750.

Baumann, Annegrit; Adolphi, Heinrich; Huber, Rolf; and Kiehs, Karl, to BASF Aktiengesellschaft. Pyridazinonyl-(di)(thio)-phosphoric (phosphonic) acid esters as pesticides. 4,260,604, Cl. 424-200.000.

Baumann, Gerald W., to International Business Machines Corporation. Virgin toner and used toner supply apparatus and method. 4,260,073, Cl. 222-1.000.

Baumruck, Manfred, to International Standard Electric Corporation. Electromagnetic relay comprising positively guided contacts. 4,260,971, Cl. 335-128.000.

Bausch & Lomb Incorporated: *See*—
Keogh, Philip L.; Kunzler, Jay F.; and Niu, Gregory C. C., 4,260,725, Cl. 526-279.000.

Bayer Aktiengesellschaft: *See*—
Beck, Manfred, 4,260,812, Cl. 560-223.000.
Binsack, Rudolf; Rempel, Dieter; Korber, Helmut; and Neuray, Dieter, 4,260,690, Cl. 525-64.000.
de Montigny, Armand; and Niederprum, Hans, 4,260,715, Cl. 556-453.000.
Haas, Peter; Blahak, Johannes; and Wiedermann, Rolf, 4,260,754, Cl. 544-215.000.
Harnisch, Horst, 4,260,776, Cl. 548-364.000.
Junge, Bodo; Krause, Hans P.; Muller, Lutz; and Puls, Walter, 4,260,622, Cl. 424-267.000.
Keller, Wolfgang, 4,260,372, Cl. 432-103.000.
Klinkmann, Kurt; and Wambach, Raimund, 4,260,827, Cl. 568-414.000.
Mazanek, Jan; and Blahak, Johannes, 4,260,557, Cl. 260-455.00R.
Medem, Harald; Freitag, Dieter; and Reinking, Klaus, 4,260,695, Cl. 525-466.000.
Pfister, Theodor, 4,260,558, Cl. 260-507.00R.
Reischl, Artur; Muller, Hanns; and Wagner, Kuno, 4,260,530, Cl. 260-29.300.
Rolf, Meinhard; Neeff, Rutger; and Muller, Walter, 4,260,540, Cl. 260-42.210.
Rudhart, Rudolf; Schulte, Klaus; Dietrich, Werner; and Decker, Heinz, 4,260,266, Cl. 366-336.000.
Schmidt, Manfred; Kemperman, Theo; Freitag, Dieter; Fries, Hermann; and Esch, Erich, 4,260,704, Cl. 525-501.000.
Schutt, Hermann, 4,260,684, Cl. 435-106.000.
Schutze, Detlef-Ingo; and Wunderlich, Klaus, 4,260,778, Cl. 549-52.000.
Sylvester, Gerd; Witte, Josef; and Marwede, Gunter, 4,260,707, Cl. 526-114.000.

Bayle Laboure, Gerard J. P.; Buisson, Marc F. B.; and Vandenbroucke, Roger A. J., to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation. Flame holder devices for combustion chambers of turbojet engine afterburner tubes. 4,259,839, Cl. 60-261.000.

Bazan, Anthony C. Skier's toe and foot insulator. 4,259,791, Cl. 36-7.200.

BBC Brown, Boveri & Company, Limited: *See*—
Osman, Maged A., 4,260,987, Cl. 340-756.000.

Beauchamp, Lynn I.; and Kraske, LeRoy E., to Deere & Company. Lock mechanism for securing a backhoe boom and swing frame for transport. 4,260,321, Cl. 414-694.000.

Beccaris, Carlo, to Societe Anonyme Francaise du Ferodo. Clutch friction disc having axial elasticity. 4,260,048, Cl. 192-107.00C.

Bechtel International Corporation: *See*—
Ellers, Frederick S.; and Wallace, Norman R., 4,260,288, Cl. 405-168.000.

Beck, Manfred, to Bayer Aktiengesellschaft. Process for the preparation of halogen butenyl acrylates. 4,260,812, Cl. 560-223.000.

Becker, Anton, to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft. Pick-up and dump machine. 4,260,050, Cl. 198-508.000.

Beecham Group Limited: *See*—
Hardy, Kenneth D.; and Burton, George, 4,260,625, Cl. 424-271.000.
Taylor, Andrew W.; Burton, George; and Clayton, John P., 4,260,746, Cl. 544-021.000.

Beer, Ekkehard, to Hoechst Aktiengesellschaft. Filtration process and apparatus. 4,260,496, Cl. 210-780.000.

Beeson, Gary H.; and Bates, George W., to Convergence Corporation. Continuous speed control system for video tape recorder. 4,261,020, Cl. 360-73.000.

Beis, Konstantinos, to Licentia Patent-Verwaltungs-G.m.b.H. Compensator for two angularly offset joined wave guides. 4,260,961, Cl. 333-21.00A.

Beiser, Leo. Videodisc player with drive means engaging videodisc guide groove. 4,260,858, Cl. 369-103.000.

Bejczy, Antal K.: *See*—
United States of America, National Aeronautics and Space Administration; and Bejczy, Antal K., 4,260,187, Cl. 294-86.00R.

Bekaert Engineering: *See*—
De Muynck, Gabriel, 4,260,001, Cl. 144-144.00A.

Belina, Casimiro. Vertically adjustable table. 4,259,909, Cl. 108-12.000.

Bell Telephone Laboratories, Incorporated: *See*—
Aaroen, James E., 4,260,859, Cl. 179-175.30R.
Barnett, William T.; Lundgren, Carl W., Jr.; Rummler, William D.; and Wang, York Y., 4,261,056, Cl. 455-273.000.
Dumbri, Austin C.; and Rosenzweig, Walter, 4,260,909, Cl. 307-297.000.
Everhart, Billy M.; and McCullough, Harold E., 4,260,972, Cl. 335-129.000.
Knowlton, Kenneth C., 4,261,018, Cl. 358-263.000.
Kovacs, Terrence; Mills, Allen P., Jr.; and Pfeiffer, Loren N., 4,260,892, Cl. 250-388.000.
Marcuse, Dietrich, 4,260,221, Cl. 350-96.310.
Plewes, John T., 4,260,432, Cl. 148-2.000.
Smith, Arnold R., 4,260,851, Cl. 174-107.000.

Belser, Dana C. Top access printing badge holder with printing card guides. 4,259,797, Cl. 40-1.500.

Belyanin, Petr N.; Frolov, Konstantin V.; Kobrinsky, Aron E.; Korendyasev, Alfred I.; Rozin, Boris S.; Salamandra, Boris L.; Sokolovsky, Felix P.; Stolin, Jury V.; and Tyves, Leonid I. Mechanical arm. 4,259,876, Cl. 74-469.000.

Belyansky, Oleg M.: *See*—
Knyazeva, Vera I.; Vasiliev, Nikolai V.; Khuditskaya, Galina S.; Ponomarev, Alexandr I.; Ponomarev, Vasily I.; and Belyansky, Oleg M., 4,259,854, Cl. 69-21.000.

Bemis Company, Inc.: *See*—
Jacobs, Richard W., 4,260,061, Cl. 206-626.000.

Benages, Jorge G. Transfer machines. 4,260,302, Cl. 408-118.000.

Benassi, Giancarlo, to Fiat Trattori S.p.A. Device for lifting implements carried on agricultural tractors. 4,260,024, Cl. 172-12.000.

Benjamin, Bruce W., to Halcon Research and Development Corp. Minimizing polymerization during recovery of methacrylic acid. 4,260,821, Cl. 562-532.000.

Benjamin, Robert E.; and Edging, Thomas E., to Stauffer Chemical Company. Process for preparing alkali metal aluminum phosphate. 4,260,591, Cl. 423-267.000.

Bennett, Aubrey; Macneal, Lachlan D. C.; and Sinclair, James S., to B.C.M.S. Engineering & Exhibitions Ltd. Apparatus for hanging an article. 4,260,063, Cl. 211-4.000.

Bennett, Frank P., to GAF Corporation. Instant print slide projector. 4,260,247, Cl. 355-45.000.

Bennoit, Horst; and Schmid, Dieter, to Hoechst Aktiengesellschaft. Process for the filtration of zeolite suspensions. 4,260,495, Cl. 210-772.000.

Berdan, Betty L.; and Luce, Betty M., to Gould Inc. Method of forming a printed circuit. 4,260,449, Cl. 156-628.000.

Berenov, Alexandr D.; Krainev, Vladislav P.; Mansurov, Midkhat M.; and Silin, Evgeny L. Dummy bar for use in machines for continuous casting of round hollow ingots. 4,260,010, Cl. 164-445.000.

Berg, Lennart G. Sealing ring. 4,260,168, Cl. 277-225.000.

Berger, Leo; and Olson, Gary L., to Hoffmann-La Roche Inc. Octahydro-1H-pyrrolo[2,3-g]isoquinolines. 4,260,762, Cl. 546-84.000.

Bergman, Carl P., to Whirlco, Inc. Powered dispenser for caulking cartridge contents. 4,260,076, Cl. 222-46.000.

Bergmann, Warren C., to Brunswick Corporation. Three-way solenoid-operated pinch valve assembly. 4,259,985, Cl. 137-595.000.

Bergquist, Ron B. Restaurant facility. 4,259,816, Cl. 52-33.000.

Bernasconi, Raymond; Ferrini, Pier G.; Goschke, Richard; and Gosteli, Jacques, to Ciba-Geigy Corporation. Oxothia compounds. 4,260,779, Cl. 549-52.000.

Berndt, Wilhelm: *See*—
Kruger, Horst; Berndt, Wilhelm; Schwartzkopff, Ursula; Reitter, Franz J.; Hopner, Theodor; and Muhlig, Hans-Joachim, 4,260,452, Cl. 162-23.000.

Berrer, Dagmar; Lorenz, Joachim; and Grade, Reinhardt, to Ciba-Geigy Corporation. 2-Methylthio-4-cyclopropylamino-6-(α,β-dimethyl-propylamino)-s-triazine. 4,260,753, Cl. 544-208.000.

Berthel, Karl; Schmid, Olaf; Walter, Berthold; Spechner, Ludwig; Sturm, Theodor; and Degel, Hans-Peter, to Robert Bosch GmbH. Plug-in electromagnetic relay. 4,260,973, Cl. 335-133.000.

Besser Company: *See*—
Balhorn, Milo G., 4,260,352, Cl. 425-211.000.

Betz, Jacob F.: *See*—
Fulop, Gabor F.; Betz, Jacob F.; Meyers, Peter V.; and Doty, Mitchell E., 4,260,427, Cl. 136-255.000.

Bicking, John B.: *See*—
Cragoe, Edward J., Jr.; Lee, Ta-Jyh; and Bicking, John B., 4,260,771, Cl. 548-187.000.

Bien, Gary K.: *See*—
Jacobe, Walter W.; and Bien, Gary K., 4,260,648, Cl. 427-45.100.

Biesinger, Erwin, to Seco Maschinenbau GmbH & Co. KG. Apparatus for the chemical treatment of articles. 4,259,855, Cl. 69-30.000.

Binsack, Rudolf; Rempel, Dieter; Korber, Helmut; and Neuray, Dieter, to Bayer Aktiengesellschaft. Thermoplastic polyester moulding compositions with good toughness properties. 4,260,690, Cl. 525-64.000.

Biogenesis, Inc.: *See*—
Maedgen, Malcolm A., Jr., 4,260,108, Cl. 239-171.000.

Bird, Alfred J.: *See*—
Thompson, David T.; Bird, Alfred J.; and Pearson, Edward J., 4,260,817, Cl. 562-487.000.

Bisagni, Emile R.; Averbeck, Dietrich; Moustacchi, Ethel; and Zajdela, Francois, to Agence Nationale de Valorisation de la Recherche (ANVAR). Skin diseases. 4,260,630, Cl. 424-283.000.

Bissett, Fred L. Powered ski. 4,260,036, Cl. 180-182.000.

Bitjurin, Valentin A.; Maximenko, Vladilen I.; and Medin, Stanislav A. Duct for magnetohydrodynamic generator. 4,260,913, Cl. 310-11.000.

Bitko, Sheldon S., to Fifth Dimension, Inc. Position insensitive mercury relay switch. 4,260,970, Cl. 335-52.000.

Bitteer, Istvan: *See*—
Hermecz, Istvan; Meszaros, Zoltan; Breining, Tibor; Virag, Sandor; Vasvari nee Debreczi, Lelle; Horvath, Agnes; Nagy, Gabor; Mandi, Attila; Szuts, Tamas; Bitteer, Istvan; and Sebestyen, Gyula, 4,260,612, Cl. 424-251.000.

Bjorke, Merlin D., to Honeywell Inc. Digital delay generator. 4,260,912, Cl. 307-597.000.

Bjorknas, John I. Propeller pitch and engine load control apparatus. 4,260,329, Cl. 416-43.000.

Blahak, Johannes: *See*—
Haas, Peter; Blahak, Johannes; and Wiedermann, Rolf, 4,260,754, Cl. 544-215.000.
Mazanek, Jan; and Blahak, Johannes, 4,260,557, Cl. 260-455.00R.

Blair, Charles M., Jr., to Magna Corporation. Method of recovering petroleum from a subterranean reservoir incorporating resinous polyalkylene oxide adducts. 4,260,019, Cl. 166-274.000.

Blake, Edward W.; and Hahn, Kurt L., to American Can Company. Strip feed elevator. 4,260,310, Cl. 414-118.000.

Blindow, Friedrich-Karl; Decker, Jurgen; Kluibenschedl, Heinrich; Munding, German; Sowa, Armin; and Wagner, Harald, to Messerschmitt-Bolkow-Blohm GmbH. Method and device for producing underground cavities using a driving shield. 4,260,194, Cl. 299-11.000.

Block Drug Company Inc.: *See*—
Ravel, Kanak K. R., 4,260,570, Cl. 264-46.600.

Bloomstein, Richard W. Creating visual images of lip movements. 4,260,229, Cl. 352-50.000.

Blount, David H. Process for the production of polyurethane silicate foams and resinous products utilizing aldehyde-broken down alkali metal cellulose silicate polymer. 4,260,696, Cl. 525-477.000.

Blumhardt, Rainer: *See*—
Bach, Walter; Blumhardt, Rainer; Fusser, Rolf; and Ruckert, Karl-Heinz, 4,259,936, Cl. 123-556.000.

Board of Regents, for and on behalf of the University of Florida: *See*—
Tsibris, John C. M., 4,260,705, Cl. 525-330.000.

Boehringer Ingelheim GmbH: *See*—
Roch, Josef; Muller, Erich; Narr, Berthold; Nickl, Josef; and Haarmann, Walter, 4,260,621, Cl. 424-267.000.

Boehringer Mannheim GmbH: *See*—
Rittersdorf, Walter; Guthlein, Werner; Werner, Wolfgang; Rey, Hanz-Georg; and Rieckmann, Peter, 4,260,777, Cl. 549-33.000.

Boeing Company M/S 7E-25, The: *See*—
Weidman, Peter C.; and Woodmansee, Wayne E., 4,261,040, Cl. 364-554.000.

Boettcher, Klaus: *See*—
Pfleger, Klaus; Zacher, Wieland; Boettcher, Klaus; Skorczyk, Ronald; Buechner, Oskar; and Mietzner, Franz G., 4,260,722, Cl. 526-68.000.

Boise Cascade Corporation: *See*—
Lindhag, Carl L., 4,259,885, Cl. 82-4.00R.

Boiten, Ebbe; Groothuis, Gerrit J.; and de Vries, Jochem J., to U.S. Philips Corporation. Shaving apparatus. 4,259,781, Cl. 30-43.600.

Bolha, David J. Lighted coaster for drinks. 4,261,026, Cl. 362-101.000.

Borg-Warner Corporation: *See*—
Miller, Alan L., 4,259,882, Cl. 74-862.000.
Norbeck, Dean K., 4,259,845, Cl. 62-209.000.

Borisof, Bernard. Self-adhering sticks, plates and other educational devices for constructing letters, figures, designs and the like. 4,259,790, Cl. 434-83.000.

Bory, Barbara H.; and Kessler, Alan B., to Lever Brothers Company. Laundry additive pouch. 4,260,054, Cl. 206-0.500.

Bose, Ajay K., to Gist-Brocades N.V. Preparation of β-lactams and intermediates therefor. 4,260,743, Cl. 542-442.000.

Bosshard, Hans: *See*—
Buhler, Niklaus; Bosshard, Hans; and Sallmann, Alfred, 4,260,544, Cl. 260-326.13C.
Buhler, Niklaus; Bosshard, Hans; and Sallmann, Alfred, 4,260,545, Cl. 260-326.13C.

Bosso, Joseph F.; Nugent, Richard M.; and Plasynski, Joseph E., to PPG Industries, Inc. Novel mercapto chain extended products and their use in cationic electrodeposition. 4,260,720, Cl. 528-109.000.

Bosso, Joseph F.: *See*—
Christenson, Roger M.; Bosso, Joseph F.; Hartman, Marvis E.; and Chang, Wen-Hsuan, 4,260,716, Cl. 528-45.000.

Bouffard, Joseph A. Elevatable bed vehicle. 4,260,315, Cl. 414-469.000.

Bour, Thomas C., to PPG Industries, Inc. Bushing environmental control apparatus. 4,260,403, Cl. 65-11.00W.

Boutros, Kamal S., to Bunker Ramo Corporation. High current filter connector with removable contact members. 4,260,966, Cl. 333-182.000.

Bovenkamp, Jan; and Melching, Jannes A. Device for reclaiming paint or like material, which during the spraying thereof does not land on the object to be treated. 4,259,899, Cl. 98-115.0SB.

Bovenkerk, Harold P., to General Electric Company. Method for preparing diamond compacts containing single crystal diamond. 4,260,397, Cl. 51-307.000.

Braden, John R. Pressure compensated potable water chlorinator. 4,260,587, Cl. 422-282.000.

Bradley, James A. Gas induction swimming pool chlorinator. 4,260,468, Cl. 204-260.000.

Branton, Tom W., to RCA Corporation. Electron beam influencing apparatus. 4,261,017, Cl. 358-248.000.

Braun, Leroy O., to Hughes Aircraft Company. Compact boresight tester for laser designators. 4,260,254, Cl. 356-154.000.

Brearley, Malcolm; and White, Alfred. K., to Girling Limited. Anti-lock brake control system. 4,260,200, Cl. 303-97.000.

Breen, Joseph R., to Continental Group, Inc., The. Reverse spray electrostatic air/powder stripe applicator. 4,259,923, Cl. 118-622.000.

Brehm, George L., to B & G Equipment Company. Valve for corrosive fluids. 4,260,130, Cl. 251-113.000.

Breining, Tibor: *See*—
Hermecz, Istvan; Meszaros, Zoltan; Breining, Tibor; Virag, Sandor; Vasvari nee Debreczi, Lelle; Horvath, Agnes; Nagy, Gabor; Mandi, Attila; Szuts, Tamas; Bitteer, Istvan; and Sebestyen, Gyula, 4,260,612, Cl. 424-251.000.

Breston, Michael P.: *See*—
Sargent, Claud B., 4,260,281, Cl. 404-127.000.

Breugelmans, Walter: *See*—
Peperstraete, Jan; and Breugelmans, Walter, 4,260,239, Cl. 355-3.0DD.

Bridgestone Tire Co., Ltd.: *See*—
Kurihara, Mamoru; Ezaki, Kiyoshi; and Takahashi, Haruo, 4,260,285, Cl. 405-68.000.

Bristol-Myers Company: *See*—
Kawaguchi, Hiroshi; Konishi, Masataka; Tsuno, Takashi; and Miyaki, Takeo, 4,260,683, Cl. 435-74.000.
Mackles, Leonard, 4,260,596, Cl. 424-14.000.

British Aerospace: *See*—
Lofts, Denis L., 4,260,339, Cl. 417-406.000.

British Petroleum Company Limited, The: *See*—
Greig, George; and Broadribb, Michael P., 4,260,489, Cl. 210-771.000.

Broadribb, Michael P.: *See*—
Greig, George; and Broadribb, Michael P., 4,260,489, Cl. 210-771.000.

Brockington, James W., to Atlas Powder Company. Transportation and placement of water-in-oil emulsion explosives and blasting agents. 4,259,977, Cl. 137-13.000.

Brockway Glass Company, Inc.: *See*—
Dembicki, Michael T.; and Poad, William J., 4,260,438, Cl. 156-69.000.

Brodmann, Franz J.; and Staut, Ronald, to General Refractories Company. Ceramic ignitor. 4,260,872, Cl. 219-270.000.

Brouwer, Nicholaas L.; and Dreinhoefer, Louis H., to Aluminum Company of America. Strand shield defect detector. 4,260,566, Cl. 264-22.000.

Brown, Donald R.; Masopust, Otto T., Jr.; and Meal, John R., to Western Electric Company, Inc. Box for encasing an electrical device. 4,260,850, Cl. 174-52.00R.

Brown, Earl T.: *See*—
Baker, Gregory N.; Bateson, John E.; Brown, Earl T.; Delgado, Hortensia E.; Siegl, Ludwig R.; and Thomas, Delbert C., Jr., 4,261,039, Cl. 364-519.000.

Brown, George. Thermostatically controlled liquid cooling apparatus for outboard motors. 4,260,011, Cl. 165-35.000.

Brown, Harvey A., to Minnesota Mining and Manufacturing Company. Photothermographic emulsions containing thermolabile acutance dyes. 4,260,676, Cl. 430-517.000.

Brown, Leo D.; Eakman, James M.; Nahas, Nicholas C.; and Clavenna, LeRoy R., to Exxon Research & Engineering Co. Cement production from coal conversion residues. 4,260,421, Cl. 106-103.000.

Brown, Paul M., Jr.; and Hamade, Adib R., to Precision Monolithics, Inc. Temperature compensated switching circuit and method. 4,260,911, Cl. 307-310.000.

Brown, William R., to FMC Corporation. Vibratory feeder leaf spring arrangement. 4,260,052, Cl. 198-763.000.

Brugmans, Marinus F.: *See*—
Jacobs, Cornelis A. J.; and Brugmans, Marinus F., 4,260,929, Cl. 313-184.000.

Brulhet, Paul, to Societe Sacilor, Acieries et Laminoirs de Lorraine. Apparatus including a venturi for removing impurities from a gaseous mixture. 4,260,563, Cl. 261-23.00R.

Bruner, Rodney J., to Emerson Electric Co. Compression fitting. 4,260,182, Cl. 285-23.000.

Brunner, Erich: *See*—
Deubzer, Bernward; and Brunner, Erich, 4,260,726, Cl. 528-15.000.

Brunswick Corporation: *See*—
Bergmann, Warren C., 4,259,985, Cl. 137-595.000.

Buchanan, Robert R. Integrated fish migration system. 4,260,286, Cl. 405-82.000.

Bucher, Gottfried: *See*—
Rohrig, Lothar; Bucher, Gottfried; and Klahre, Horst, 4,260,355, Cl. 425-258.000.

Buchert, Dieter; and Stelzer, Karl-Heinz, to Metzeler Schaum GmbH. Apparatus for producing rectangular blocks of foamed resins. 4,260,353, Cl. 425-224.000.

Buck, Gerold A.: *See*—
Schreck, Philipp; and Buck, Gerold A., 4,260,126, Cl. 249-20.000.

Buckner, William L. Shoulder-supported golf club carrier. 4,260,088, Cl. 224-202.000.

Bucko, Robert J.: *See*—
Milnes, Frank J.; Bucko, Robert J.; and Gavin, David F., 4,260,505, Cl. 252-77.000.

Buczek, Carl J.: *See*—
Wayne, Robert J.; Laughman, Lanny M.; Chenausky, Peter P.; and Buczek, Carl J., 4,260,958, Cl. 331-94.5PE.

Budd Company, The: *See*—
Herring, James M., Jr., 4,260,103, Cl. 237-5.000.
Iseler, Kenneth A.; and Shah, Mayur S., 4,260,538, Cl. 260-40.00R.

Buechner, Oskar: *See*—
Pfleger, Klaus; Zacher, Wieland; Boettcher, Klaus; Skorczyk, Ronald; Buechner, Oskar; and Mietzner, Franz G., 4,260,722, Cl. 526-68.000.

Bugaut, Andree; and Laudon, Monique, to L'Oreal. Quaternary diaminobenzoquinones. 4,260,749, Cl. 544-166.000.

Buhler, Niklaus; Bosshard, Hans; and Sallmann, Alfred, to Ciba-Geigy Corporation. Halogenomethylene-indoxyls. 4,260,544, Cl. 260-326.13C.

Buhler, Niklaus; Bosshard, Hans; and Sallmann, Alfred, to Ciba-Geigy Corporation. N-Substituted halogenomethyleneindoxyls. 4,260,545, Cl. 260-326.13C.

Buisson, Marc F. B.: *See*—
Bayle Laboure, Gerard J. P.; Buisson, Marc F. B.; and Vandenbroucke, Roger A. J., 4,259,839, Cl. 60-261.000.

Bunge Edible Oil Corporation: *See*—
Cochran, Walter M., 4,260,643, Cl. 426-606.000.

Bunker Ramo Corporation: *See*—
Boutros, Kamal S., 4,260,966, Cl. 333-182.000.

Burghart, George L. Vibratory conveyor system with counter vibration component and non-vibrating support. 4,260,051, Cl. 198-760.000.

Burns, John A., to Western Electric Company, Inc. X-ray mask. 4,260,670, Cl. 430-5.000.

Burrough, Donald E.: *See*—
Campbell, Hallis D.; Burrough, Donald E.; and Seefeld, Dean E., 4,259,900, Cl. 100-88.000.

Burroughs Corporation: *See*—
Dakroub, Housan, 4,261,015, Cl. 358-172.000.

Burroughs Wellcome Co.: *See*—
Moreno, Carlos, 4,260,602, Cl. 424-180.000.
Morrison, Robert W., Jr.; Mallory, William R.; and Styles, Virgil L., 4,260,758, Cl. 544-262.000.

Burton, George: *See*—
Hardy, Kenneth D.; and Burton, George, 4,260,625, Cl. 424-271.000.
Taylor, Andrew W.; Burton, George; and Clayton, John P., 4,260,746, Cl. 544-021.000.

Burton, John S., to Autologic, Inc. Media transporter for phototypesetter-processor. 4,260,234, Cl. 354-319.000.

Bush, Harold G., to United States of America, National Aeronautics and Space Administration. Lightweight structural columns. 4,259,821, Cl. 52-309.100.

Busse, Richard O. Removable insulated valve cover. 4,259,981, Cl. 137-375.000.

C.E.P. Industries Ltd.: *See*—
Rath, Albert, 4,259,794, Cl. 37-42.0VL.

C. Itoh Electronics: *See*—
Kondur, Nicholas, Jr., 4,260,271, Cl. 400-232.000.

C. L. Frost & Son, Inc.: *See*—
Weis, Siegfried K., 4,260,306, Cl. 409-200.000.

Cafiero, Alfred V.: *See*—
Olsen, Gregory H.; and Cafiero, Alfred V., 4,260,525, Cl. 252-521.000.

Caillaud, Therese: *See*—
Lecerf, Andre; and Caillaud, Therese, 4,260,668, Cl. 429-194.000.

Cairns, James; Logan, Robert T.; McGarry, George; Roy, Robert G.; and Woods, Gilbert F., to Akzo N.V. Novel alkylated pregnanes, processes for their preparation and pharmaceutical compositions containing same. 4,260,605, Cl. 424-243.000.

Calbiochem-Behring Corp.: *See*—
Pollard, John K., Jr., 4,260,681, Cl. 435-24.000.

Calderon, Reynaldo, to Texaco Inc. Self-cleaning helical spring sand screen. 4,260,016, Cl. 166-74.000.

Cale, Albert D., Jr.; and Jenkins, Herndon, to A. H. Robins Company, Inc. 3-Methyleneazetidine derivatives. 4,260,606, Cl. 424-244.000.

Calpis Food Industry Co., Ltd., The: *See*—
Yasumatsu, Mutsuo; Katayama, Kenji; and Sakamoto, Koichi, 4,260,636, Cl. 426-34.000.

Calvi, Salvatore J.: *See*—
Dolan, Donald T.; and Calvi, Salvatore J., 4,260,243, Cl. 355-15.000.

Cameron, Thomas M., to International Harvester Company. Integral box section boom arm. 4,260,322, Cl. 414-727.000.

Campbell, Barry D., to R. A. Pearson Co. Case packing machine. 4,259,826, Cl. 53-543.000.

Campbell, Hallis D.; Burrough, Donald E.; and Seefeld, Dean E., to Gehl Company. Rotary baling machine having dual belt driving means with overrunning sprocket. 4,259,900, Cl. 100-88.000.

Campbell, Ian P.: *See—*
Nicholson, John G.; and Campbell, Ian P., 4,260,483, Cl. 209-539.000.

Canadian Patents and Development Limited: *See—*
Ahlborn, Boye; and Kwan, Joe W. M., 4,260,927, Cl. 310-300.000.
Kerr, F. Michael; and Westland, Alan D., 4,260,645, Cl. 427-1.000.
Whitehead, Lorne A., 4,260,220, Cl. 350-96.280.

Canevari, Roger: *See—*
Regnier, Gilbert; Canevari, Roger; Laubie, Michel; and Poignant, Jean-Claude, 4,260,610, Cl. 424-250.000.

Cangialosi, Ignazio: *See—*
Winner, Kurt W.; and Cangialosi, Ignazio, 4,259,813, Cl. 49-504.000.

Cannon, Robert L.; and Griffin, Andrew J., to American Optical Corporation. Heart rate analyzer. 4,259,966, Cl. 128-706.000.

Canon Kabushiki Kaisha: *See—*
Honma, Toshio; Furuichi, Katsushi; Murakami, Katsumi; and Tomosada, Masahiro, 4,260,241, Cl. 355-14.00R.
Ishiwatari, Masumi; Horyu, Sakae; and Seki, Mitsuaki, 4,261,042, Cl. 364-709.000.
Suzuki, Ryoichi, 4,260,230, Cl. 354-76.000.

Cantrel, James F., to Ingersoll-Rand Company. Friction rock stabilizer and method for inserting thereof in an earth structure bore. 4,260,294, Cl. 405-259.000.

Capuano, Terry D., to Lamson & Sessions Co., The. Thread tapping form. 4,259,889, Cl. 411-417.000.

Carl Schenck Ag: *See—*
Schuck, Ludwig, 4,259,907, Cl. 104-48.000.

Carl Still, Firma: *See—*
Stratmann, Josef; and Strobel, Manfred, 4,260,460, Cl. 202-227.000.

Carl Still Recklinghausen, Firma: *See—*
Weber, Heinrich; Lorenz, Kurt; and Dungs, Horst, 4,260,458, Cl. 202-121.000.

Carl Zeiss-Stiftung: *See—*
Traeger, Rolf; Marx, Dieter; and Knutti, Helmut, 4,260,217, Cl. 350-1.200.

Carlin, Carl-Gustaf, to Atlas Copco Aktiebolag. Method and apparatus for inspection and fail-safe control of threaded joint tightening processes. 4,259,869, Cl. 73-761.000.

Carlson, Mark E. Drop-out socket wrench. 4,259,883, Cl. 81-62.000.

Carr, Albert A.; Cheng, Hsien C.; Horgan, Stephen W.; and Woodward, James K., to Richardson-Merrell Inc. Tetrahydro and imidazoline antisecretory compounds. 4,260,626, Cl. 424-273.00R.

Carr, Edward P.: *See—*
Dotson, Ronald L.; and Carr, Edward P., 4,260,494, Cl. 210-721.000.

Carr, Norman L.; and McGinnis, Edgar L., to Gulf Research & Development Company. Filtration of a coal liquid slurry using polyisobutylene and an alcohol. 4,260,485, Cl. 210-728.000.

Carrington, Roy; and Hall, Michael C., to Pfizer Inc. Carboxylated cellulose ion-exchange materials. 4,260,740, Cl. 536-63.000.

Carter, Ernest E., Jr.: *See—*
Baker, Eugene E.; and Carter, Ernest E., Jr., 4,260,164, Cl. 277-34.000.

Cartwright, Richard V., to Hercules Incorporated. 1-Olefin polymerization catalyst. 4,260,711, Cl. 526-153.000.

Cary, John R.; and Wesner, Walter H., to AFA Corporation, The. Manually operated liquid dispensers. 4,260,079, Cl. 222-209.000.

Casara, Patrick J.; Jung, Michel; and Metcalf, Brian W., to Merrell Toruade et Compagnie. α-Acetylenic derivatives of α-amino acids. 4,260,823, Cl. 562-571.000.

Cassidy, John D.; and Steinbrecher, Lester, to Amchem Products, Inc. Chrome removal waste treatment process. 4,260,491, Cl. 210-720.000.

Cassutt, Thomas R.; Messerly, James W.; and Senderling, Ronald L., to B.F. Goodrich Company, The. Underwater curing of epoxy resin and amine-terminated liquid polymer and product thereof. 4,260,700, Cl. 525-113.000.

Caterpillar Tractor Co.: *See—*
Grgurich, William A., 4,260,112, Cl. 239-533.800.
Habiger, Cyril W., 4,260,132, Cl. 251-297.000.
Muntjanoff, John R., 4,260,323, Cl. 414-731.000.

Cattan, Gilles: *See—*
Kerhoas, Jean-Claude; and Cattan, Gilles, 4,259,871, Cl. 74-5.460.

Cavallari, Pier G., to Honeywell Information Systems Italia. Mosaic printing head. 4,260,270, Cl. 400-124.000.

Cavigelli, George A., to American Optical Corporation. High voltage CRT supply. 4,261,032, Cl. 363-19.000.

Cavil, David T.; and Krueger, William R., to Outboard Marine Corporation. Speed sensitive field weakening control for traction motors. 4,260,937, Cl. 318-358.000.

Celanese Corporation: *See—*
Hannon, Martin J.; and Greene, Richard K., 4,260,066, Cl. 215-12.00R.
Kliger, Howard S., 4,260,143, Cl. 267-148.000.

Celtite, Inc.: *See—*
Plaisted, Anthony C., 4,260,699, Cl. 525-27.000.

Centro-Maskin Goteborg AB: *See—*
Johansson, Bengt A.; Nyvall, Ake K.; and Jonsson, Frank G., 4,260,433, Cl. 148-9.500.

Centro Ricerche Fiat S.p.A.: *See—*
Tavoni, Gian P., 4,259,864, Cl. 73-170.00R.

Cerrato, Vincent J., to Vending Components Inc. Method and apparatus for dispensing beer through a gas line. 4,260,074, Cl. 222-1.000.

Ceskoslovenska Akademie Ved: *See—*
Kolinsky, Miloslav; Macho, Vendelin; Porubsky, Juraj; Kuska, Vladislav; Manas, Jaroslav; Sykora, Stanislav; and Lukas, Rudolf, 4,260,541, Cl. 260-45.8NT.

Cha, John: *See—*
Uyeda, Stanley T.; and Cha, John, 4,260,287, Cl. 405-168.000.

Chafer, Henry J.; and Purkiss, Anthony J., to Lucas Industries Limited. Spark discharge ignition systems for gas turbine engines. 4,261,025, Cl. 361-257.000.

Champion International Corporation: *See—*
Faller, Rudolph A., 4,260,060, Cl. 206-622.000.
Mode, Duane, 4,260,099, Cl. 229-31.00R.
Roccaforte, Harry I., 4,260,059, Cl. 206-588.000.
Webinger, George P., 4,260,101, Cl. 229-41.00C.

Chan, David C. K.: *See—*
Schinski, William L.; Chan, David C. K.; and Huang, Irene C., 4,260,410, Cl. 71-76.000.

Chandler, Earl E. Ground wheel drive apparatus. 4,259,872, Cl. 74-13.000.

Chang, Wen-Hsuan: *See—*
Christenson, Roger M.; Bosso, Joseph F.; Hartman, Marvis E.; and Chang, Wen-Hsuan, 4,260,716, Cl. 528-45.000.

Chapel, Annette M.: *See—*
Horvath, Ralph S.; and Chapel, Annette M., 4,260,056, Cl. 206-370.000.

Chapman, Lloyd E.; and Pedley, Dennis W., to Westinghouse Electric Corp. Incandescent reflector lamp for railway warning-signal apparatus. 4,261,027, Cl. 362-255.000.

Charles, Joseph T. Method and apparatus for mounting and aligning electrical components. 4,260,853, Cl. 178-46.000.

Charles Stark Draper Laboratory, Inc., The: *See—*
Kumar, Kaplesh; and Das, Dilip K., 4,260,582, Cl. 264-111.000.

Charlton, Andrew P.: *See—*
Lewis, Kenneth D.; Charlton, Andrew P.; Nyrop, Per; and Merediz, Tristan O., 4,260,480, Cl. 209-211.000.

Charnley, Denis H., to Chemcom Corporation. Aqueous liquid adhesive composition and method. 4,260,420, Cl. 106-74.000.

Chauvette, Robert R., to Eli Lilly and Company. 3-Halo cephalosporins. 4,260,745, Cl. 544-16.000.

Chemcom Corporation: *See—*
Charnley, Denis H., 4,260,420, Cl. 106-74.000.

Chen, Nai Y.; Haag, Werner O.; and Huang, Tracy J., to Mobil Oil Corporation. Ethane conversion process. 4,260,839, Cl. 585-257.000.

Chenausky, Peter P.: *See—*
Wayne, Robert J.; Laughman, Lanny M.; Chenausky, Peter P.; and Buczek, Carl J., 4,260,958, Cl. 331-94.5PE.

Cheng, Hsien C.: *See—*
Carr, Albert A.; Cheng, Hsien C.; Horgan, Stephen W.; and Woodward, James K., 4,260,626, Cl. 424-273.00R.

Chernack, Milton P.; and Greenberg, Mishel, to Chesebrough-Pond's Inc. Dual valve for respiratory device. 4,259,951, Cl. 128-200.140.

Chesebrough-Pond's Inc.: *See—*
Chernack, Milton P.; and Greenberg, Mishel, 4,259,951, Cl. 128-200.140.

Chevallier, Andre. Ball and socket joint and its method of construction. 4,260,275, Cl. 403-133.000.

Chevron Research Company: *See—*
Gould, George D., 4,259,976, Cl. 137-13.000.
Moore, Joseph E., 4,260,624, Cl. 424-270.000.
Schinski, William L.; Chan, David C. K.; and Huang, Irene C., 4,260,410, Cl. 71-76.000.
Scott, John W., 4,260,475, Cl. 208-113.000.

Chew, William M.: *See—*
Martignoni, Pasquale; Murfree, James A.; Nappier, Henry A.; Ayers, Orval E.; and Chew, William M., 4,260,653, Cl. 427-247.000.

Ching, Ta-Yen, to General Electric Company. UV stabilized polycarbonate resins. 4,260,719, Cl. 528-196.000.

Ching, Ta-Yen, to General Electric Company. UV Stabilized polycarbonate resins. 4,260,732, Cl. 528-192.000.

Chinoin Gyogyszer es Vecyeszeti Termekek Gyara Rt.: *See—*
Hermecz, Istvan; Meszaros, Zoltan; Breining, Tibor; Virag, Sandor; Vasvari nee Debreczi, Lelle; Horvath, Agnes; Nagy, Gabor; Mandi, Attila; Szuts, Tamas; Bitteer, Istvan; and Sebestyen, Gyula, 4,260,612, Cl. 424-251.000.

Chisso Corporation: *See—*
Harada, Masato; Ishigaki, Yoshikatsu; Yamada, Sadahiko; Suzuki, Atsushi; Masuda, Jun; Hamazaki, Tadamitsu; Yoshida, Toshiaki; and Fukuda, Kiyoto, 4,260,723, Cl. 526-115.000.

Chlor-Chem Limited: *See—*
Drew, John F.; Pepper, John A.; Shuttlewood, Victor C.; and West, Keith D., 4,260,752, Cl. 544-190.000.

Christensen, Burton G., to Merck & Co., Inc. 6-(1'-Hydroxyethyl)-2-substituted-pen-2-em-3-carboxylic acid. 4,260,618, Cl. 424-263.000.

Christensen, Burton G.; and Shih, David H., to Merck & Co., Inc. 1-, 6- And 2-substituted-1-carba-2-penem-3-carboxylic acids. 4,260,627, Cl. 424-274.000.

Christenson, Roger M.; Bosso, Joseph F.; Hartman, Marvis E.; and Chang, Wen-Hsuan, to PPG Industries, Inc. Polymeric quaternary ammonium hydroxides and their use in coating applications. 4,260,716, Cl. 528-45.000.

Chrysler Corporation: *See—*
Pacis, Arnold F.; and Youngdale, Ralph A., 4,260,176, Cl. 280-668.000.

Chu, Chin-Chiun, to Mobil Oil Corporation. Shape selective reactions with berylium-modified zeolite catalysts. 4,260,843, Cl. 585-467.000.

Chung, Alfred: *See—*
Ryan, James W.; and Chung, Alfred, 4,260,682, Cl. 435-24.000.

CH_2O, Inc.: *See—*
Courtright, Burr, 4,260,109, Cl. 239-189.000.

Ciba-Geigy Aktiengesellschaft: *See—*
Schwander, Hansrudolf; and Zickendraht, Christian, 4,260,770, Cl. 548-159.000.

Ciba-Geigy Corporation: *See—*
Bernasconi, Raymond; Ferrini, Pier G.; Goschke, Richard; and Gosteli, Jacques, 4,260,779, Cl. 549-52.000.
Berrer, Dagmar; Lorenz, Joachim; and Grade, Reinhardt, 4,260,753, Cl. 544-208.000.
Buhler, Niklaus; Bosshard, Hans; and Sallmann, Alfred, 4,260,544, Cl. 260-326.13C.
Buhler, Niklaus; Bosshard, Hans; and Sallmann, Alfred, 4,260,545, Cl. 260-326.13C.
Finch, Neville; and Mizzoni, Renat H., 4,260,620, Cl. 424-266.000.
Grieder, Alfred; and Coers, Klaus-Jurgen, 4,260,782, Cl. 560-43.000.
Lacroix, Roger, 4,260,391, Cl. 8-519.000.
Michaelis, Peter, 4,260,503, Cl. 252-48.600.
Mizzoni, Renat H., 4,260,619, Cl. 424-263.000.
Myatt, Hal L., 4,260,555, Cl. 260-465.00E.
Rody, Jean; and Rasberger, Michael, 4,260,689, Cl. 525-55.000.
Rody, Jean; and Rasberger, Michael, 4,260,691, Cl. 525-130.000.

Cibie Projecteurs: *See—*
Fratty, Hector, 4,261,031, Cl. 362-336.000.

Ciganek, Engelbert, to Du Pont de Nemours, E. I., and Company. Intermediates for the preparation of octahydro-1H-benzo[4,5-]furo[3,2,-e]-isoquinoline analgesic and narcotic antagonistic compounds. 4,260,761, Cl. 546-66.000.

Citizen Watch Co., Ltd.: *See—*
Komiyama, Katsuhiko; and Hiruta, Toshio, 4,261,049, Cl. 368-88.000.
Motoki, Jinro; Ichikawa, Singo; Miyasaka, Kenzi; Uematsu, Hiroyuki; Murata, Mitsuhiro; Kawashima, Hideyuki; Inoue, Yuri; Ohkubo, Masae; and Oooka, Mituo, 4,261,048, Cl. 368-69.000.

Civitelli, Gennaro. Shock-absorbing hinge-pin doorstop. 4,259,762, Cl. 16-86.00B.

Clairol Incorporated: *See—*
Walter, Henry J.; Kunz, Raymond W.; and Shoemaker, Richard E., 4,260,875, Cl. 219-364.000.

Claremon, David A.: *See—*
Nicolaou, Kyriacos C.; Magolda, Ronald L.; and Claremon, David A., 4,260,806, Cl. 560-118.000.

Clark, David P.; and Eustis, John L., to Eaton Corporation. Valve selector module assembly. 4,259,931, Cl. 123-198.00F.

Clark Products Co., Inc.: *See—*
Clarke, Stephen G., 4,259,927, Cl. 119-51.00R.

Clarke, Stephen G., to Clark Products Co., Inc. Birdfeeder. 4,259,927, Cl. 119-51.00R.

Clavenna, LeRoy R.: *See—*
Brown, Leo D.; Eakman, James M.; Nahas, Nicholas C.; and Clavenna, LeRoy R., 4,260,421, Cl. 106-103.000.

Clavin, Edward A.: *See—*
Slavens, Clyde M.; and Clavin, Edward A., 4,260,869, Cl. 219-124.310.

Clayton Dewandre Company Limited: *See—*
Hawker, Michael J., 4,260,197, Cl. 303-52.000.

Clayton, John P.: *See—*
Taylor, Andrew W.; Burton, George; and Clayton, John P., 4,260,746, Cl. 544-021.000.

Clendening, Frank J., Jr.; and Rose, Elva L., to Du Pont de Nemours, E. I., and Company. Yarn texturing jet. 4,259,768, Cl. 28-254.000.

Clopton, Robert T. Device for preventing tool breakage in tool machines. 4,260,305, Cl. 409-134.000.

Clorox Company, The: *See—*
Maddox, Lodric L., 4,260,508, Cl. 252-99.000.

Closson, Thomas A.; Oxford, David B.; Schenck, Stephen R.; and Seitchik, Jerold A., to Texas Instruments Incorporated. Temperature compensated magnetic bubble memory sense amplifier. 4,261,044, Cl. 365-8.000.

Coates, Clarence A., Jr.; and Weaver, Max A., to Eastman Kodak Company. Methine dyes from tetrahydroquinoline compounds containing n-thioether substituents. 4,260,742, Cl. 542-127.000.

Coates, John P., to Lumenition Limited. Four lead monolithic Darlingtons. 4,259,939, Cl. 123-605.000.

Cochran, Walter M., to Bunge Edible Oil Corporation. Triglyceride compositions. 4,260,643, Cl. 426-606.000.

Coers, Klaus-Jurgen: *See—*
Grieder, Alfred; and Coers, Klaus-Jurgen, 4,260,782, Cl. 560-43.000.

Coherent, Inc.: *See—*
Munnerlyn, Charles R.; Joba, Lawrence R.; and Shanker, Ramakrishna, 4,260,227, Cl. 351-24.000.

Coleman Company, Inc., The: *See—*
Pollard, Jerry, 4,260,576, Cl. 264-257.000.

Colgate-Palmolive Company: *See—*
Bauman, Robert A., 4,260,497, Cl. 252-8.750.
Sonenstein, Gerard G.; and Kaeser, James A., 4,259,957, Cl. 128-287.000.
Wixon, Harold E., 4,260,651, Cl. 427-214.000.

Collin, Everett E., to Nordson Corporation. Unwinding stand for level wind reclosable stock pouch material and methods. 4,260,116, Cl. 242-55.000.

Collins, Thomas W.; and Mehta, Kay B., to International Business Machines Corporation. Magnetic bubble Y-bar corner. 4,261,045, Cl. 365-26.000.

Colman, Derek, to Texas Instruments Incorporated. Integrated circuits with built-in power supply protection. 4,260,910, Cl. 307-303.000.

Colombo, Antonio, to SGS Ates Componenti Elettronici S.p.A. Circuit arrangement for suppressing CRT beam in television receiver. 4,260,935, Cl. 315-381.000.

Columbia Ribbon & Carbon Mfg. Co., Inc.: *See—*
Dapp, George P.; and Scott, Michael A., 4,260,664, Cl. 428-476.900.

Combustion Engineering, Inc.: *See—*
Fellnor, John R.; and Love, William J., Jr., 4,260,373, Cl. 432-110.000.
Jones, Brian C., 4,259,911, Cl. 110-245.000.

Communications Satellite Corporation: *See—*
Flieger, Howard W., 4,260,967, Cl. 333-208.000.

Compagnie Industrielle de Mecanismes: *See—*
Periou, Pierre; and Rampignon, Marc, 4,260,189, Cl. 296-223.000.

Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Touzard, Jean-Pierre; and Georget, Hubert, 4,260,953, Cl. 330-279.000.

Compagnie Internationale pour l-Informatique Cii-Honeywell Bull (Societe Anonyme): *See—*
Desserre, Jacques, 4,261,024, Cl. 360-103.000.

Computer Automation, Inc.: *See—*
Saccomano, Michael L.; Washburn, Jerry R.; Goodrich, Donald W.; Wagner, Victor A.; and Kaufman, Phillip A., 4,261,034, Cl. 364-200.000.

Condolios, Elie, to Societe Generale de Constructions Electriques et Mecaniques Alsthom S.A. Device for compacting and draining fluid sludges containing fibrous materials. 4,260,488, Cl. 210-259.000.

Congleton, Robert S.; and Treacy, Edmond B., to Jersey Nuclear-Avco Isotopes, Inc. Use of multiple beams from frequency augmented laser radiation. 4,260,957, Cl. 331-94.50N.

Connolly, John F., to Standard Oil Company (Indiana). Process for renewing the adsorptive capacity of a bed of active carbon. 4,260,484, Cl. 252-411.00R.

Conoco, Inc.: *See—*
Kinsey, Ennis W., Jr.; Gonzalez, Carlos; and Cox, James T., 4,259,975, Cl. 137-1.000.

Conrad, Raymond W., to United States of America, Army. Irradiance analyzer for high power lasers. 4,260,251, Cl. 356-121.000.

Continental Group, Inc., The: *See—*
Breen, Joseph R., 4,259,923, Cl. 118-622.000.

Convergence Corporation: *See—*
Beeson, Gary H.; and Bates, George W., 4,261,020, Cl. 360-73.000.

Conway, Daniel E. Area measuring apparatus for attachment to a linear conveyor. 4,260,877, Cl. 235-92.0DN.

Cook, Robert D., to Crane Co. Skid control valve and system. 4,260,198, Cl. 303-92.000.

Cooper, Joseph C. Earth working attachment for tractors. 4,260,028, Cl. 172-298.000.

Coors Container Company: *See—*
Robertson, King G., 4,260,419, Cl. 75-142.000.

Copal Company Limited: *See—*
Arai, Kiyoyuki, 4,260,268, Cl. 400-121.000.

Copoulos, George J., to Du Pont de Nemours, E. I., and Company. Condensing trumpet. 4,259,766, Cl. 19-150.000.

Corbett, Daniel W.; and Guile, Donald L., to Corning Glass Works. Gelled solder glass suspensions for sealing glass or ceramic parts. 4,260,406, Cl. 65-43.000.

Cordis Corporation: *See—*
Peers-Trevarton, Charles A., 4,259,962, Cl. 128-419.00P.

Corning Glass Works: *See—*
Ambrogi, Raymond R., 4,260,405, Cl. 65-42.000.
Corbett, Daniel W.; and Guile, Donald L., 4,260,406, Cl. 65-43.000.
Lepp, Cyrus A.; and Odstrchel, Gerald, 4,260,678, Cl. 435-7.000.

Corrans, Ian J., to National Institute of Metallurgy. Magnetic separators. 4,260,477, Cl. 209-38.000.

Corver, Hans A.; and Robertson, Allan J., to Cyanamid Canada, Inc. Manufacture of water-insoluble ammonium polyphosphate. 4,260,592, Cl. 423-305.000.

Coughlin, William J.; Hoffman, Stephen A.; and Hummel, Jerry R., to Arcair Company. Electrode drive and nozzle system for automatic air-carbon arc cutting and gouging torch. 4,260,867, Cl. 219-70.000.

Coulson, Robert A., to United Kingdom Atomic Energy Authority. Sealing devices. 4,260,308, Cl. 414-8.000.

Courtright, Burr, to CH_2O, Inc. Reel transport alignment system. 4,260,109, Cl. 239-189.000.

Cox, James T.: *See—*
Kinsey, Ennis W., Jr.; Gonzalez, Carlos; and Cox, James T., 4,259,975, Cl. 137-1.000.

Coyner, John V.: *See—*
United States of America, National Aeronautics and Space Administration; Hedgepeth, John M.; Coyner, John V.; and Crawford, Robert F., 4,259,825, Cl. 52-645.000.

CPC International Inc.: *See—*
Werfelman, Daniel H., 4,260,426, Cl. 134-29.000.

Craddock, Charles F.: *See—*
Poppe, Wassily; Craddock, Charles F.; Gutekunst, Robert W.; Ladd, Robert G.; and Mager, Sue A., 4,260,567, Cl. 264-25.000.

Crager, Bruce L.: *See—*
Steddum, Riddle E.; Nezames, Theodore H.; Smith, Terrence M.; and Crager, Bruce L., 4,260,292, Cl. 405-217.000.

Cragoe, Edward J., Jr.; Lee, Ta-Jyh; and Bicking, John B., to Merck & Co., Inc. Interphenylene 9-thia-11-oxo-12-azaprostanoic acid compounds. 4,260,771, Cl. 548-187.000.
Crane Co.: *See*—
Cook, Robert D., 4,260,198, Cl. 303-92.000.
Crase, Gary M.; and Trzeciak, Kurt M., to Smith International, Inc. Bearing assembly. 4,260,202, Cl. 308-8.200.
Cratin, John R., Jr., to Standard Oil Company (Indiana). Furnace fuel optimizer. 4,260,363, Cl. 431-76.000.
Crawford, Lynn D., to Hanscom, Genevieve I.; Hanscom, Genevieve I.; and Thomson, Lois J., Trustees of the Estate of Roy M. Magnuson, part interest to each. Parts assembler for ballpoint pens. 4,259,780, Cl. 29-808.000.
Crawford, Robert F.: *See*—
United States of America, National Aeronautics and Space Administration; Hedgepeth, John M.; Coyner, John V.; and Crawford, Robert F., 4,259,825, Cl. 52-645.000.
Crider, William A. Fluid-driven rotary engine. 4,260,902, Cl. 290-43.000.
Crinos Industria Farmacobiologica S.p.A.: *See*—
Reiner, Alberto, 4,260,613, Cl. 424-256.000.
Cromemco Inc.: *See*—
Kausch, Marvin L., 4,259,843, Cl. 62-3.000.
Crooks, Robert C., to Barcus-Berry, Inc. Amplifier load correction system. 4,260,954, Cl. 330-85.000.
Croy, Richard L. De-watering system. 4,260,283, Cl. 405-36.000.
Cruickshank, Thomas. Rotary internal combustion engine. 4,259,929, Cl. 123-43.00C.
Curtin, Hoyt S. Pipe coupling. 4,260,181, Cl. 285-15.000.
Cyanamid Canada, Inc.: *See*—
Corver, Hans A.; and Robertson, Allan J., 4,260,592, Cl. 423-305.000.
Cymara, Hermann K. Panemone wind turbine. 4,260,325, Cl. 415-2.00R.
Dachert, Francois; Gelin, Jean; and Ropars, Raymond, to Societe Lignes Telegraphiques et Telephoniques. Luneberg type passive reflector for circularly polarized waves. 4,260,991, Cl. 343-756.000.
Dacons, Joseph C., to United States of America, Navy. Recrystallization of hexsanitrostilbene from nitric acid and water. 4,260,837, Cl. 568-931.000.
Daikin Kogyo Co., Ltd.: *See*—
Tatemoto, Masayoshi; Tomoda, Masayasu; and Ueta, Yutaka, 4,260,698, Cl. 525-102.000.
Daimler-Benz Aktiengesellschaft: *See*—
Bauer, Theodor, 4,260,188, Cl. 296-107.000.
Frotschner, Eberhard; and Offterdinger, Hans-Georg, 4,260,330, Cl. 416-180.000.
Dakroub, Housan, to Burroughs Corporation. Video clamp. 4,261,015, Cl. 358-172.000.
Daleo, Joseph. Shoulder holster with means to secure the same to wearer's garment. 4,260,089, Cl. 224-206.000.
Dalton, Murphy L., Jr. Magnetic field detection apparatus. 4,260,949, Cl. 324-302.000.
D'Amico, Fabrizio; Serboki, Giancarlo; and Foti, Vincenzo, to Anic S.p.A. Process for the production of fibrous structures. 4,260,565, Cl. 264-13.000.
Dan Gurney Cycle Products: *See*—
Warren, John A., Jr., 4,260,084, Cl. 224-32.00A.
Dana Corporation: *See*—
Kessmar, Leo R., 4,259,877, Cl. 74-473.00R.
Daniel, John M.: *See*—
Hart, Gwyn G., 4,260,195, Cl. 299-11.000.
Daniels, Phillip D. Bracket for wooden structures. 4,260,277, Cl. 403-235.000.
Daniels, Wiley E.: *See*—
Iacoviello, John G.; and Daniels, Wiley E., 4,260,533, Cl. 260-29.6TA.
Dannels, W. Andrew; and Bainbridge, Robert W., to Hooker Chemicals & Plastics Corp. Apparatus for runnerless injection molding thermosetting materials. 4,260,359, Cl. 425-543.000.
Dannert, Horst; and Hirsch, Hans-Jurgen, to U.S. Philips Corporation. Electroradiographic recording device. 4,260,887, Cl. 250-315.200.
Dapp, George P.; and Scott, Michael A., to Columbia Ribbon & Carbon Mfg. Co., Inc. Transfer elements and process. 4,260,664, Cl. 428-476.900.
D'Aragon, Paul. Two stage gravity method of concentration of fine dry materials. 4,260,482, Cl. 209-480.000.
Darby, William L.: *See*—
Armor, Anthony F.; Darby, William L.; and Anderson, James M., 4,260,327, Cl. 415-200.000.
Das, Dilip K.: *See*—
Kumar, Kaplesh; and Das, Dilip K., 4,260,582, Cl. 264-111.000.
Daschievici, Stefan: *See*—
Arama, Stefanica; Daschievici, Stefan; Ferat, Cezar; and Turcescu, Feodor, 4,259,894, Cl. 91-487.000.
Daughenbaugh, Randall J.: *See*—
Dixon, Dale D.; and Daughenbaugh, Randall J., 4,260,748, Cl. 544-106.000.
Davidson, Val E.: *See*—
Rose, Dennis H.; and Davidson, Val E., 4,260,258, Cl. 356-335.000.
Davis, Ronald P., to Interlock Industries Limited. Releasable retaining means for a closure element. 4,259,811, Cl. 49-356.000.
Day, Harry E., to Day Industrial Research Corporation. Current carrying reciprocable fluid motor. 4,260,868, Cl. 219-86.310.
Day Industrial Research Corporation: *See*—
Day, Harry E., 4,260,868, Cl. 219-86.310.
Dean, Glenn L. Table saw mitre gauge extension. 4,259,887, Cl. 83-437.000.
DeBenedictis, Angelo P.; and Zorzy, Plato. Pulse code modulation responsive alarm system. 4,260,982, Cl. 340-539.000.
Decker, Heinz: *See*—
Rudhart, Rudolf; Schulte, Klaus; Dietrich, Werner; and Decker, Heinz, 4,260,266, Cl. 366-336.000.
Decker, Jurgen: *See*—
Blindow, Friedrich-Karl; Decker, Jurgen; Kluibenschedl, Heinrich; Munding, German; Sowa, Armin; and Wagner, Harald, 4,260,194, Cl. 299-11.000.
Deckert, Dale I. Sprinkler grass trimming tool. 4,260,026, Cl. 172-25.000.
DeCristofaro, Nicholas J.; Levinson, Samuel; and Sexton, Peter, to Allied Chemical Corporation. Brazed metal articles. 4,260,666, Cl. 428-668.000.
Deere & Company: *See*—
Anderson, John F., 4,259,878, Cl. 74-491.000.
Beauchamp, Lynn I.; and Kraske, LeRoy E., 4,260,321, Cl. 414-694.000.
Eline, Claude J., 4,260,037, Cl. 181-204.000.
Jerke, Marlyn L.; Stokes, William E.; and Wolf, David L., 4,259,831, Cl. 56-98.000.
Rettig, Vernon E.; and Myers, John R., 4,260,172, Cl. 280-411.00A.
Degel, Hans-Peter: *See*—
Berthel, Karl; Schmid, Olaf; Walter, Berthold; Spechner, Ludwig; Sturm, Theodor; and Degel, Hans-Peter, 4,260,973, Cl. 335-133.000.
DeHart, Howard L.: *See*—
Dolinski, Stanley R.; and DeHart, Howard L., 4,259,774, Cl. 29-263.000.
Delgado, Hortensia E.: *See*—
Baker, Gregory N.; Bateson, John E.; Brown, Earl T.; Delgado, Hortensia E.; Siegl, Ludwig R.; and Thomas, Delbert C., Jr., 4,261,039, Cl. 364-519.000.
Delinting Systems, Inc.: *See*—
Downing, James D., 4,259,764, Cl. 19-41.000.
DeLiotta, Holga E. T.: *See*—
Liotta, Domingo S.; and DeLiotta, Holga E. T., 4,259,753, Cl. 3-1.500.
Della-Moretta, Leonard B.: *See*—
Lambert, Michael B.; and Della-Moretta, Leonard B., 4,259,834, Cl. 56-504.000.
Delphi Company Ltd.: *See*—
Niihama, Koichi; and Ishizuka, Yoshitada, 4,260,860, Cl. 200-6.00R.
Delphian Corporation: *See*—
Hadden, David M.; and Micko, Eric S., 4,260,950, Cl. 324-438.000.
DeLuca, Hector F.; Schnoes, Heinrich K.; Paaren, Herbert E.; and Hamer, David E., to Wisconsin Alumni Research Foundation. Process for preparing 1α-hydroxylated compounds. 4,260,549, Cl. 260-397.200.
DeLuca, Hector F.; Schnoes, Heinrich K.; and Esvelt, Robert P., to Wisconsin Alumni Research Foundation. Processes for preparing calcitroic acid and esters thereof. 4,260,804, Cl. 560-117.000.
Dembicki, Michael T.; and Poad, William J., to Brockway Glass Company, Inc. Preparation of glass container for thermoplastic closure. 4,260,438, Cl. 156-69.000.
de Montigny, Armand; and Niederprum, Hans, to Bayer Aktiengesellschaft. Process for the production of siliconfunctional polyorganosiloxanes. 4,260,715, Cl. 556-453.000.
De Muynck, Gabriel, to Bekaert Engineering. Woodworking machines. 4,260,001, Cl. 144-144.00A.
Dension, Dean R.; and Hartsough, Larry D., to Perkin-Elmer Corporation, The. Laser induced dissociative chemical gas phase processing of workpieces. 4,260,649, Cl. 427-53.100.
de Polo, Harry R. Umbrella. 4,259,974, Cl. 135-24.000.
DeSoto, Inc.: *See*—
Sekmakas, Kazys; and Plaisance, Thomas H., 4,260,730, Cl. 528-145.000.
Desserre, Jacques, to Compagnie Internationale pour l-Informatique Cii-Honeywell Bull (Societe Anonyme). Transducer platform. 4,261,024, Cl. 360-103.000.
Detalle, Pol; and Detalle, Richard. Slide-valve output regulating throttle. 4,260,081, Cl. 222-600.000.
Detalle, Richard: *See*—
Detalle, Pol; and Detalle, Richard, 4,260,081, Cl. 222-600.000.
Deubzer, Bernward; and Brunner, Erich, to Wacker-Chemie GmbH. Thermosetting organopolysiloxane compositions. 4,260,726, Cl. 528-15.000.
de Vaan, Robertus L. C.: *See*—
Kuus, Gijsbert; de Vaan, Robertus L. C.; Jacobs, Cornelis A. J.; and Smulders, Herman A. G. S., 4,260,934, Cl. 315-326.000.
de Vries, Jochem J.: *See*—
Boiten, Ebbe; Groothuis, Gerrit J.; and de Vries, Jochem J., 4,259,781, Cl. 30-43.600.
De Wald, Horace A., to Warner-Lambert Company. Hexahydro-1-arylspiro(3H-oxazolo(3,4-A)pyridine-3,4'-piperidene) antidepressants, pharmaceutical compositions thereof and method of use thereof. 4,260,623, Cl. 424-267.000.
DHV Raadgevend Ingenieursbureau BV: *See*—
Huart, Robert, 4,260,284, Cl. 405-43.000.
Dickey, Avis M., to Dickey, Inc. Easy pull clawed tool rest. 4,260,135, Cl. 254-1.000.
Dickey, Inc.: *See*—
Dickey, Avis M., 4,260,135, Cl. 254-1.000.

Didycz, William J.; Glassman, Donald; Maier, Edward E.; and Saniga, George T., to United States Steel Corporation. Process for separating acid gases and ammonia from dilute aqueous solutions thereof. 4,260,462, Cl. 203-22.000.

Dieme, Hilmar K., to Amerace Corporation. Apparatus for producing locking patches on magnetic screws. 4,259,922, Cl. 118-500.000.

Diesch, Robert E.; and Eutenuer, Charles L., to Pako Corporation. Photographic print stacking device. 4,260,148, Cl. 271-219.000.

Diesel Equipment Limited: *See*—
Martin, Paul H.; and Martin, John C., 4,260,317, Cl. 414-517.000.

Diesel Kiki Company, Ltd.: *See*—
Nomura, Hiroshi, 4,260,337, Cl. 417-269.000.

Dietrich, Werner: *See*—
Rudhart, Rudolf; Schulte, Klaus; Dietrich, Werner; and Decker, Heinz, 4,260,266, Cl. 366-336.000.

Digital Equipment Corporation: *See*—
Hertrich, Friedrich R., 4,260,914, Cl. 310-27.000.

Dillon, Ronald D.: *See*—
Moss, Jack R.; Sugar, John W.; Riemer, Ronald A.; Frick, Charles E.; and Dillon, Ronald D., 4,260,490, Cl. 210-620.000.

DiMarco, Bernard, to Gould Inc. Handle locking means for circuit breaker. 4,260,861, Cl. 200-42.00T.

Dixon, Dale D.; and Daughenbaugh, Randall J., to Air Products and Chemicals, Inc. Morpholine from bis (cyanomethyl) ether. 4,260,748, Cl. 544-106.000.

Dobo, Gyorgy: *See*—
Lapis, Karoly; Szende, Bela; Jeney, Andreas; Kopper, Laszlo; Simon, Karoly; Tyihak, Erno; Kisfaludy, Lajos; Kovacs, Lajos; and Dobo, Gyorgy, 4,260,595, Cl. 424-10.000.

Dobson, Charles D.: *See*—
Young, Charles E.; and Dobson, Charles D., 4,260,364, Cl. 431-160.000.

Dr. Ing. Rudolf Hell GmbH: *See*—
Knop, Hans-Georg, 4,261,011, Cl. 358-75.000.

Dr. Johannes Heidenhain GmbH: *See*—
Spies, Alfons, 4,260,205, Cl. 308-9.000.

Doi, Kouichi: *See*—
Hosokawa, Masuo; Yokoyama, Tohei; Mizui, Katsuya; Yamashita, Haruhisa; and Doi, Kouichi, 4,260,478, Cl. 209-139.00A.

Dolan, Donald T.; and Calvi, Salvatore J., to Pitney Bowes Inc. Cleaning apparatus. 4,260,243, Cl. 355-15.000.

Dolinski, Stanley R.; and DeHart, Howard L., to General Motors Corporation. Hub installing and removing tool. 4,259,774, Cl. 29-263.000.

Domke, James G. Camera and accessory case. 4,260,004, Cl. 150-30.000.

Dorn, Michael M., to International Telephone and Telegraph Corporation. Fault-closable electrical connector. 4,260,214, Cl. 339-111.000.

Dorr-Oliver Incorporated: *See*—
Lewis, Kenneth D.; Charlton, Andrew P.; Nyrop, Per; and Merediz, Tristan O., 4,260,480, Cl. 209-211.000.

Dorsey, Charles L.; Dorsey, Donald L.; and Richardson, Sam M., III. Portable boat ramp. 4,260,282, Cl. 405-1.000.

Dorsey, Donald L.: *See*—
Dorsey, Charles L.; Dorsey, Donald L.; and Richardson, Sam M., III, 4,260,282, Cl. 405-1.000.

Dost, Gunter; and Bauer, Fritz, to Hoechst Aktiengesellschaft. Oral administration of Salinomycin to pigs. 4,260,631, Cl. 424-283.000.

Dostis, Irving; Lee, Myung-Ki; and Shimbo, Osamu, to Satellite Business Systems. PSK Modulator with reduced adjacent channel interference. 4,261,053, Cl. 375-60.000.

Dotson, Ronald L.; and Carr, Edward P., to Olin Corporation. Method of purifying aqueous solutions of metal hydroxides. 4,260,494, Cl. 210-721.000.

Doty, Mitchell E.: *See*—
Fulop, Gabor F.; Betz, Jacob F.; Meyers, Peter V.; and Doty, Mitchell E., 4,260,427, Cl. 136-255.000.

Douda, Bernard E.; Parrish, Clyde F.; and Short, James E., Jr., to United States of America, Navy. Solvent having high flash point. 4,260,509, Cl. 252-171.000.

Dover Corporation: *See*—
Pemberton, Eugene B.; and Fahl, Richard L., 4,259,984, Cl. 137-533.310.

Dow Chemical Company, The: *See*—
Hanmer, Richard A., 4,260,453, Cl. 162-105.000.
Harris, Robert F.; and Wagener, Earl H., 4,260,826, Cl. 568-11.000.
McIntyre, James A.; Phillips, Robert F.; and Lefevre, Joseph D., 4,260,469, Cl. 204-265.000.
Mendoza, Abel, 4,260,811, Cl. 560-218.000.
Morris, Leo R., 4,260,766, Cl. 546-303.000.
Nelson, Wayne F.; and Weiss, Paul A., 4,260,017, Cl. 166-154.000.
Nelson, Wayne F.; and Gurley, Derrel G., 4,260,020, Cl. 166-305.00R.
Walles, Wilhelm E., 4,260,225, Cl. 350-353.000.

Downing, James D., to Delinting Systems, Inc. Apparatus for the foamed acid delinting of cottonseed. 4,259,764, Cl. 19-41.000.

Drapac, Michael J., to Rockwell International Corporation. 4:1 Balun. 4,260,963, Cl. 333-26.000.

Dreinhoefer, Louis H.: *See*—
Brouwer, Nicholaas L.; and Dreinhoefer, Louis H., 4,260,566, Cl. 264-22.000.

Dresser Industries, Inc.: *See*—
Jackson, G. C., Jr., 4,260,031, Cl. 175-107.000.
Jacobi, Helmuth O., 4,260,304, Cl. 409-132.000.
Sample, Thomas E., Jr.; and Horn, John M., 4,260,498, Cl. 252-28.000.

Drew, John F.; Pepper, John A.; Shuttlewood, Victor C.; and West, Keith D., to Chlor-Chem Limited. Chlorination process. 4,260,752, Cl. 544-190.000.

Drew, W. Howard: *See*—
Sheaks, Lloyd D.; and Drew, W. Howard, 4,259,862, Cl. 73-73.000.

Drilbox Georg Knoblauch Werkzeugkassettenfabrik: *See*—
Wall-Andersen, Steen, 4,260,057, Cl. 206-379.000.

Drmaj, Diana. Construction of children's clothing. 4,259,751, Cl. 2-269.000.

DSO "Cherna Metalurgia": *See*—
Koychev, Todor Y.; Georgiev, Georgi M.; Lazov, Lyuben K.; and Valchev, Alexander Y., 4,259,919, Cl. 118-47.000.

Ducon Company, Inc., The: *See*—
Zenz, Frederick A., 4,260,298, Cl. 406-146.000.

Duisburger Dupferhutte: *See*—
Piret, Norbert L.; Hopper, Meinolf; and Kudelka, Herbert, 4,260,588, Cl. 423-37.000.

Dumas, Theodore A.: *See*—
Anderson, Mardis V.; and Dumas, Theodore A., 4,260,992, Cl. 343-761.000.

Dumbri, Austin C.; and Rosenzweig, Walter, to Bell Telephone Laboratories, Incorporated. Back gate bias voltage generator circuit. 4,260,909, Cl. 307-297.000.

Duncan, Farris N.: *See*—
Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., 4,260,071, Cl. 220-445.000.

Dungs, Horst: *See*—
Weber, Heinrich; Lorenz, Kurt; and Dungs, Horst, 4,260,458, Cl. 202-121.000.

Dunlop Limited: *See*—
Udall, William S.; and Harrington, Wilfred H., 4,260,006, Cl. 152-362.00R.

Dunne, Maurice J.: *See*—
Engelberger, Joseph F.; Lindbom, Torsten H.; Dunne, Maurice J.; Perzley, William; Roberts, Wilbur N.; and Gardner, Horace L., 4,260,940, Cl. 318-562.000.
Engelberger, Joseph F.; Lindbom, Torsten H.; Dunne, Maurice J.; Perzley, William; Roberts, Wilbur N.; and Gardner, Horace L., 4,260,941, Cl. 318-562.000.

Duo-Fast Corporation: *See*—
Austin, Ronald, 4,260,092, Cl. 227-8.000.

Du Pont de Nemours, E. I., and Company: *See*—
Ciganek, Engelbert, 4,260,761, Cl. 546-66.000.
Clendening, Frank J., Jr.; and Rose, Elva L., 4,259,768, Cl. 28-254.000.
Copoulos, George J., 4,259,766, Cl. 19-150.000.
Schmidt, Gunter, 4,260,896, Cl. 250-468.000.
Schmidt, William K.; Smith, Christine; Smith, Dewey H., Jr.; and Vernier, Vernon G., 4,260,629, Cl. 424-274.000.

Dupont Energy Management Corporation: *See*—
Hicks, John R., 4,261,037, Cl. 364-464.000.

Durand, Daniel C.; and Mangin, Pierre M. F., to Naphthachimie. Magnesium-based catalyst for use in the polymerization of olefins. 4,260,709, Cl. 526-137.000.

Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R., to Smith Kline & French Laboratories Limited. Pharmacologically active compounds. 4,260,744, Cl. 544-8.000.

DuRay, Harry A. Grass collection apparatus. 4,259,832, Cl. 56-202.000.

Durckheimer, Walter: *See*—
Raether, Wolfgang; Durckheimer, Walter; and Seidenath, Hans, 4,260,615, Cl. 424-257.000.

Dusza, John P., to American Cyanamid Company. 2-Pyridylhydrazides. 4,260,767, Cl. 546-306.000.

Dusza, John P.: *See*—
Moran, Daniel B.; Dusza, John P.; and Albright, Jay D., 4,260,756, Cl. 544-236.000.

Dybas, Richard A.; Grier, Nathaniel; and Witzel, Bruce E., to Merck & Co., Inc. Diaryl-aliphatic-amino-aliphatic-piperazines. 4,260,760, Cl. 544-396.000.

Dydyk, Michael, to Motorola, Inc. RF Termination for coaxial transmission lines. 4,260,962, Cl. 333-22.00R.

Dynamit Nobel Aktiengesellschaft: *See*—
Petersen, Egon N., 4,260,803, Cl. 560-108.000.

Dynapol: *See*—
Wingard, Robert E., Jr.; and Leonard, William J., Jr., 4,260,714, Cl. 526-271.000.

E. R. Squibb & Sons, Inc.: *See*—
Hoehn, Hans, 4,260,614, Cl. 424-256.000.
Hoehn, Hans, 4,260,616, Cl. 424-258.000.
Treuner, Uwe D., 4,260,751, Cl. 544-183.000.

Eakman, James M.: *See*—
Brown, Leo D.; Eakman, James M.; Nahas, Nicholas C.; and Clavenna, LeRoy R., 4,260,421, Cl. 106-103.000.

Earle, Redmond B. Toothbrush. 4,259,761, Cl. 15-143.00R.

Eastman Kodak Company: *See*—
Coates, Clarence A., Jr.; and Weaver, Max A., 4,260,742, Cl. 542-127.000.
Jacobe, Walter W.; and Bien, Gary K., 4,260,648, Cl. 427-45.100.
Merrill, Stewart H., 4,260,671, Cl. 430-67.000.
Smart, David C., 4,260,256, Cl. 356-235.000.

Eaton Corporation: *See*—
Clark, David P.; and Eustis, John L., 4,259,931, Cl. 123-198.00F.
Harman, James R.; Larson, William M.; and Threat, J. B., 4,260,136, Cl. 254-380.000.
Holton, Robert J., 4,259,767, Cl. 24-73.0SM.

Ebauches Electroniques SA: *See—*
Stampfli, Jean-Marcel, 4,261,050, Cl. 368-259.000.

Ebert, Michael: *See—*
Pilipski, Mark, 4,260,685, Cl. 435-161.000.

Eckert, Alton B., Jr.; Lowe, Lynnwood; and McFiggans, Robert B., to Pitney Bowes Inc. Electronic postage meter with power failure accounting protection system. 4,259,902, Cl. 101-91.000.

Edbro Limited: *See—*
Houston, John; and Rigby, Victor P., 4,260,297, Cl. 405-303.000.

Edens, Walter W.; and Ingerson, Quentin F., to Ampco-Pittsburgh Corporation. Copper-nickel-silicon-chromium alloy having improved electrical conductivity. 4,260,435, Cl. 148-32.500.

Edging, Thomas E.: *See—*
Benjamin, Robert E.; and Edging, Thomas E., 4,260,591, Cl. 423-267.000.

Edlinger, Manfred: *See—*
Hirn, Ferdinand; and Edlinger, Manfred, 4,260,280, Cl. 404-122.000.

Een-Holmgren Ortopediska AB: *See—*
Axelsson, Robert, 4,259,949, Cl. 128-77.000.

Ehrhart, Wendell A. High performance urethane coating which is a solvent solution of a polyester containing hydroxyl groups and an aliphatic diisocyanate. 4,260,717, Cl. 528-59.000.

Eibofner, Eugen; and Strohmaier, Ernst, to Kaltenbach & Voight GmbH & Co. Dental handpiece. 4,260,381, Cl. 433-126.000.

Eichbaum, Barlane R.; Eisele, Judith A.; and Bauer, Donald J., to United States of America, Interior. Production of alumina from aluminum nitrate solutions. 4,260,589, Cl. 423-123.000.

Eisele, Judith A.: *See—*
Eichbaum, Barlane R.; Eisele, Judith A.; and Bauer, Donald J., 4,260,589, Cl. 423-123.000.

Eisenlohr, Karl H.; and Gaensslen, Hans, to Metallgesellschaft Aktiengesellschaft. Process of producing hydrocarbons from coal. 4,260,472, Cl. 208-8.0LE.

Ejnell, Sture; and Arrdal, Borje, to Saab-Scania AB. Target device for practice shooting in darkness. 4,260,160, Cl. 273-408.000.

Ekstam, John C., to Trac-Back Corporation. Crane attachments for backhoe and tractor. 4,260,064, Cl. 212-231.000.

Ekstedt, Edward E.: *See—*
Koshoffer, John M.; Ekstedt, Edward E.; and Stamm, Edward I., 4,259,842, Cl. 60-757.000.

Eli Lilly and Company: *See—*
Chauvette, Robert R., 4,260,745, Cl. 544-16.000.

Eline, Claude J., to Deere & Company. Assembly for silencing engine cooling fan noise. 4,260,037, Cl. 181-204.000.

Ellers, Frederick S.; and Wallace, Norman R., to Bechtel International Corporation. Pipe laying apparatus and method. 4,260,288, Cl. 405-168.000.

Elliott, Frank S. Insulative roof apparatus. 4,259,817, Cl. 52-96.000.

Elliott, Kevin J., to Tempetro International Limited. Fuel treatment device. 4,259,937, Cl. 123-557.000.

Ellis, John D.: *See—*
Ore, Fernando; Ellis, John D.; and Moore, James H., 4,260,584, Cl. 422-189.000.

Emerson Electric Co.: *See—*
Bruner, Rodney J., 4,260,182, Cl. 285-23.000.
Graaf, Max V.; and Mang, Josef, 4,260,324, Cl. 414-735.000.

EMI Limited: *See—*
Williams, Anthony M., 4,260,891, Cl. 250-385.000.

Emmett, John C.: *See—*
Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R., 4,260,744, Cl. 544-8.000.

Emmons, William D.: *See—*
Babuka, Robert; Emmons, William D.; Weiss, Robert L.; and Yacko, Peter, 4,260,210, Cl. 339-91.00R.

Energy Conversion Devices, Inc.: *See—*
McCormick-Goodhart, Mark H., 4,260,250, Cl. 355-113.000.

Engelberger, Joseph F.; Lindbom, Torsten H.; Dunne, Maurice J.; Perzley, William; Roberts, Wilbur N.; and Gardner, Horace L., to Unimation, Inc. Programmable automatic assembly system. 4,260,940, Cl. 318-562.000.

Engelberger, Joseph F.; Lindbom, Torsten H.; Dunne, Maurice J.; Perzley, William; Roberts, Wilbur N.; and Gardner, Horace L., to Unimation, Inc. Programmable automatic assembly system. 4,260,941, Cl. 318-562.000.

Engineering Enterprises, Inc.: *See—*
Fox, Fred K., 4,260,030, Cl. 175-107.000.
Fox, Fred K., 4,260,032, Cl. 175-107.000.
Fox, Fred K., 4,260,167, Cl. 277-135.000.

Engle, William B., to Reliance Electric Company. Explosion proof submersible gearmotor. 4,260,918, Cl. 310-87.000.

Enomotol, Satoru: *See—*
Asano, Kiro; Tamura, Humio; Tanaka, Hiromitsu; and Enomotol, Satoru, 4,260,736, Cl. 536-5.000.

Envirotech Corporation: *See—*
King, Donald L.; and Glanville, Gerald S., 4,259,777, Cl. 29-526.00R.

Erdelyi, Emery: *See—*
Holly, Sandor; and Erdelyi, Emery, 4,260,888, Cl. 250-330.000.

Erickson, John W., to Kobe, Inc. Erosion resistant surface. 4,260,658, Cl. 428-163.000.

Eriksson, Caj. E. A.; and Tjelle, Svein, to Svenska Institutet for Konserveringsforskning. Preparation of food functional proteins. 4,260,644, Cl. 426-656.000.

Ernest, Robert P.: *See—*
Hideg, Laszlo; and Ernest, Robert P., 4,259,932, Cl. 123-209.000.

Erpenbach, Heinz; Gehrmann, Klaus; and Joest, Herbert, to Hoechst Aktiengesellschaft. Carrier-supported catalyst and process for making it. 4,260,520, Cl. 252-437.000.

Esch, Erich: *See—*
Schmidt, Manfred; Kemperman, Theo; Freitag, Dieter; Fries, Hermann; and Esch, Erich, 4,260,704, Cl. 525-501.000.

Eshghy, Siavash, to Rockwell International Corporation. Tension control of fasteners. 4,259,772, Cl. 29-240.000.

Eshghy, Siavash, to Rockwell International Corporation. Tension control of fasteners. 4,259,773, Cl. 29-240.000.

Eshghy, Siavash, to Rockwell International Corporation. Tension control of fasteners. 4,259,775, Cl. 29-407.000.

Esquire, Inc.: *See—*
Hernandez, Jose A., 4,261,030, Cl. 362-296.000.

Esvelt, Robert P.: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; and Esvelt, Robert P., 4,260,804, Cl. 560-117.000.

Etablissements Carpano & Pons: *See—*
Saligny, Yves, 4,260,856, Cl. 179-98.000.

Etablissements Francois Salomon and Fils: *See—*
Salomon, Georges P. J., 4,260,175, Cl. 280-629.000.

Etsion, Izhak: *See—*
United States of America, National Aeronautics and Space Administration; and Etsion, Izhak, 4,260,166, Cl. 277-96.000.

Eustis, John L.: *See—*
Clark, David P.; and Eustis, John L., 4,259,931, Cl. 123-198.00F.

Eutenuer, Charles L.: *See—*
Diesch, Robert E.; and Eutenuer, Charles L., 4,260,148, Cl. 271-219.000.

Everhart, Billy M.; and McCullough, Harold E., to Bell Telephone Laboratories, Incorporated. Electromechanical relay apparatus. 4,260,972, Cl. 335-129.000.

Exxon Research & Engineering Co.: *See—*
Brown, Leo D.; Eakman, James M.; Nahas, Nicholas C.; and Clavenna, LeRoy R., 4,260,421, Cl. 106-103.000.
Puls, Friedrich H.; and Ruhnke, Klaus D., 4,260,840, Cl. 585-259.000.

Ezaki, Kiyoshi: *See—*
Kurihara, Mamoru; Ezaki, Kiyoshi; and Takahashi, Haruo, 4,260,285, Cl. 405-68.000.

Fabris, Hubert J.: *See—*
Aggarwal, Sundar L.; Hargis, Ivan G.; Livigni, Russell A.; and Fabris, Hubert J., 4,260,519, Cl. 252-431.00L.
Aggarwal, Sundar L.; Hargis, Ivan G.; Livigni, Russell A.; and Fabris, Hubert J., 4,260,712, Cl. 526-181.000.

Fahl, Richard L.: *See—*
Pemberton, Eugene B.; and Fahl, Richard L., 4,259,984, Cl. 137-533.310.

Falck, John B.; Glanvill, Keith B.; and Reid, John N., to Tag Radionics Limited. Presence sensing detector and system for detecting a receiver/transmitter device affixed to an article. 4,260,983, Cl. 340-572.000.

Falkenstein, Georg: *See—*
Ohlinger, Rainer; Falkenstein, Georg; Wurmb, Rolf; and Marx, Matthias, 4,260,554, Cl. 260-453.0SP.

Faller, Rudolph A., to Champion International Corporation. Food carton for microwave heating. 4,260,060, Cl. 206-622.000.

Farina, Attilio, to Indesit Industria Elettrodomestici Italiana, S.p.A. Electronic tuning circuit arrangement for direct and indirect station selection using a memory circuit. 4,261,055, Cl. 455-158.000.

Farr, Glyn P., to Girling Limited. Hydraulic anti-skid systems for vehicles. 4,260,201, Cl. 303-99.000.

Farrell, Beverly P.; and Mucha, Michael E., to Farrell, Beverly P. Method for identification of animals. 4,260,646, Cl. 427-1.000.

Farrissey, William J., Jr.; Goldwasser, David J.; and Onder, Kemal B., to Upjohn Company, The. Modified carbodiimide-containing polyisocyanates and glassy polyurethanes therefrom. 4,260,718, Cl. 528-60.000.

Fasano, Osvaldo, to START S.p.A. - Studi Apparecchiature Ricercne Techniche. Devices for automatic wear compensation in motor vehicle friction clutch operating mechanisms. 4,260,049, Cl. 192-111.00A.

Faverty, Delmar A.; and Shuck, Robert E., to Babcock & Wilcox Company, The. Fiber-resin blending technique. 4,260,265, Cl. 366-101.000.

Fechko, George J.: *See—*
Lugosi, Robert; Fechko, George J.; Male, Alan T.; Haller, Henry E., III; and Mole, Cecil J., 4,260,924, Cl. 310-213.000.

Federal Paper Board Company, Inc.: *See—*
Manizza, Guelfo A.; and Neale, Douglas L., 4,260,098, Cl. 229-31.00R.

Feehan, John D., to International Telephone and Telegraph Corporation. Ebullient cooled power devices. 4,260,014, Cl. 165-105.000.

Fein, Richard S.; and Powers, Charles T., to Texaco Inc. Water-based lubricants. 4,260,499, Cl. 252-32.500.

Feistkorn, Jochen; Pohlmann, Edgar; Rothmayer, Walter; Schwarzler, Peter; Steinmetz, Gunter; and Zander, Peter, to Krauss-Maffei AG. Electromagnetic suspension vehicle. 4,259,908, Cl. 104-281.000.

Fellnor, John R.; and Love, William J., Jr., to Combustion Engineering, Inc. Method and apparatus for drying and preheating small metallic particles. 4,260,373, Cl. 432-110.000.

Fencl, George A., to Talos Systems, Inc. Up/down scanning digitizing apparatus and method. 4,260,852, Cl. 178-19.000.

Ferat, Cezar: *See—*
Arama, Stefanica; Daschievici, Stefan; Ferat, Cezar; and Turcescu, Feodor, 4,259,894, Cl. 91-487.000.

Ferrini, Pier G.: *See*—
Bernasconi, Raymond; Ferrini, Pier G.; Goschke, Richard; and Gosteli, Jacques, 4,260,779, Cl. 549-52.000.
Fiala, Johann. Clamping wall plug for elongated bodies. 4,260,122, Cl. 248-71.000.
Fiat Trattori S.p.A.: *See*—
Benassi, Giancarlo, 4,260,024, Cl. 172-12.000.
Gregorio, Angelo, 4,260,025, Cl. 172-12.000.
Fiber Associates, Inc.: *See*—
Geyer, Charles J., Jr; and White, Ben E., 4,260,739, Cl. 536-61.000.
Fiber Industries, Inc.: *See*—
Russell, Luther O., Jr., 4,260,350, Cl. 425-197.000.
Fifth Dimension, Inc.: *See*—
Bitko, Sheldon S., 4,260,970, Cl. 335-52.000.
Filterwerk Mann & Hummel GmbH: *See*—
Bach, Walter; Blumhardt, Rainer; Fusser, Rolf; and Ruckert, Karl-Heinz, 4,259,936, Cl. 123-556.000.
Finch, Neville; and Mizzoni, Renat H., to Ciba-Geigy Corporation. 2-Pyridinecarboxylic acids. 4,260,620, Cl. 424-266.000.
Finckh, Hermann, to Kraftwerk Union Aktiengesellschaft. Solar power plant with open gas turbine circuit. 4,259,836, Cl. 60-39.330.
Finkelstein, Wolfgang; Riegel, Hans; and Kurzhals, Gerhard, to Gebruder Trox, Gesellschaft mit beschrankter Haftung. Ceiling air outlet for climate control system. 4,259,898, Cl. 98-40.00D.
Firestone Tire & Rubber Company, The: *See*—
Osborn, William E.; and Symens, Ronald E., 4,260,889, Cl. 250-358.00T.
Firth, Bruce E., to UOP Inc. Preparation of alkylphenols. 4,260,833, Cl. 568-789.000.
Fisher, Gordon L., to International Nickel Company, Inc., The. Insoluble anode for electrowinning metals. 4,260,470, Cl. 204-286.000.
Fisher, Joseph J.: *See*—
Reese, Thomas J.; and Fisher, Joseph J., 4,260,408, Cl. 65-106.000.
Fisher, Stanton E. Unitized animal food system product. 4,260,635, Cl. 426-3.000.
Flatley, Doris W.: *See*—
Ipri, Alfred C.; and Flatley, Doris W., 4,259,779, Cl. 29-571.000.
Fleissner, Hans, to Vepa Aktiengesellschaft. Using a continuous open-width washing machine for pile-structured textiles, and equipment therefor. 4,259,853, Cl. 68-5.00D.
Fleming, Alan W., to TRW Inc. Failure detection and correction system for redundant control elements. 4,260,942, Cl. 318-565.000.
Fleming, John B. Variable speed electric motor transmission. 4,260,919, Cl. 310-113.000.
Fletcher, Aaron N.: *See*—
Miles, Melvin H.; and Fletcher, Aaron N., 4,260,667, Cl. 429-112.000.
Flieger, Howard W., to Communications Satellite Corporation. High power waveguide filter. 4,260,967, Cl. 333-208.000.
Flippin, James S., to J. I. Case Company. Cable plow assembly. 4,260,290, Cl. 405-181.000.
Floyd, Don E., to Henkel Corporation. Epoxy-amine adducts for use in electrodeposition. 4,260,727, Cl. 528-45.000.
Floyd, Middleton B., Jr., to American Cyanamid Company. 1-Descarboxy-1-ketoester (ketoacid)-prostaglandins. 4,260,805, Cl. 560-118.000.
Floyd, Roger M.: *See*—
Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., 4,260,071, Cl. 220-445.000.
Fluid Data, Inc.: *See*—
Foundos, Albert P.; and Ricardi, Roland P., 4,259,867, Cl. 73-421.50R.
FMC Corporation: *See*—
Brown, William R., 4,260,052, Cl. 198-763.000.
Thomas, James L., 4,260,423, Cl. 106-273.00R.
Fodor, Lawrence M., to Phillips Petroleum Company. Phosphite in MgX_2 supported $TiX_3/AlCl_3$ catalyst system. 4,260,708, Cl. 526-125.000.
Fonderie de L'Yonne: *See*—
Guirriec, Louis, 4,259,874, Cl. 474-28.000.
Fontana, Giampiero, to Valextra S.p.A. Key-retaining loop for a key case. 4,259,857, Cl. 70-456.00B.
Ford, Leslie J.; and Barker, Derrick P., to Imperial Chemical Industries Limited. Modified fluidized bed. 4,260,721, Cl. 528-272.000.
Ford, Leslie J.: *See*—
Anderton, Nicholas W. R.; Ford, Leslie J.; Kirk, Frank A.; and Oliver, Raymond, 4,260,734, Cl. 528-272.000.
Ford, Mack L.; and McFarland, William W., to International Paper Company. Method for making an improved variable flute container. 4,260,442, Cl. 156-207.000.
Ford Motor Company: *See*—
Bartos, Thomas E., 4,260,417, Cl. 75-130.00R.
Hellriegel, Edmund, 4,259,823, Cl. 52-400.000.
Hideg, Laszlo; and Ernest, Robert P., 4,259,932, Cl. 123-209.000.
Forsberg, John W., to Lubrizol Corporation, The. Magnesium-containing complexes, method for their preparation, and compositions containing the same. 4,260,500, Cl. 252-33.000.
Forte, Paulino: *See*—
Vidueira, Jose A.; Forte, Paulino; and Somekh, George S., 4,260,476, Cl. 208-321.000.
Foster, Edwin E. Pedal actuated brake control system. 4,260,044, Cl. 192-5.000.
Foster, Edwin E. Bicycle gear shift system. 4,260,171, Cl. 280-279.000.
Foti, Vincenzo: *See*—
D'Amico, Fabrizio; Serboki, Giancarlo; and Foti, Vincenzo, 4,260,565, Cl. 264-13.000.
Foucht, Millard E., to Owens-Corning Fiberglas Corporation. Urethane foam compositions. 4,260,514, Cl. 252-182.000.
Foundos, Albert P.; and Ricardi, Roland P., to Fluid Data, Inc. Gas sample conditioning apparatus. 4,259,867, Cl. 73-421.50R.
Fowler, Eugene W., to Gene Fowler and Friends, Inc. Method of producing free-standing newspaper inserts with a tissue sample attached. 4,260,444, Cl. 156-252.000.
Fox, Daniel J.; Van Blarcom, David; and Rubin, Fred K., to Lever Brothers Company. Aqueous high viscosity liquid dishwasher compositions. 4,260,528, Cl. 252-525.000.
Fox, Fred K., to Engineering Enterprises, Inc. Well tool. 4,260,030, Cl. 175-107.000.
Fox, Fred K., to Engineering Enterprises, Inc. Well drilling tool. 4,260,032, Cl. 175-107.000.
Fox, Fred K., to Engineering Enterprises, Inc. Well drilling tool. 4,260,167, Cl. 277-135.000.
Frame, Robert R., to UOP Inc. Catalytic oxidation of mercaptan in sour petroleum distillate. 4,260,479, Cl. 208-207.000.
Frank, Reinhard, to Sound-Source International. Arrangement for vibrationless coupling of a phonograph record with the turntable of a phonograph. 4,260,161, Cl. 369-58.000.
Frank, Richard J. Foldable mast assembly. 4,259,917, Cl. 114-91.000.
Frankenberg, Carl R., to American Foam Latex Corporation. Method of manufacturing a heat reflective mattress pad. 4,260,440, Cl. 156-163.000.
Franssen, Carol A.: *See*—
Ward, John A.; and Franssen, Carol A., 4,259,918, Cl. 116-200.000.
Franz, Raimund, to Hoechst Aktiengesellschaft. Process for the preparation of carbonyl difluorides. 4,260,561, Cl. 260-544.00F.
Fratty, Hector, to Cibie Projecteurs. Ribbed lenses for headlamps. 4,261,031, Cl. 362-336.000.
Freeman, Richard B.; and Schmidt, Alfred W. Vacuum-pneumatic power tool. 4,259,858, Cl. 72-391.000.
Freer, Lyle L. Picket fence. 4,260,138, Cl. 256-19.000.
Freissmuth, Alfred; Gmohling, Werner; and Rock, Heinrich, to SKW Trostberg Aktiengesellschaft. Desulfurizing composition, process for producing them and desulfurization of pig iron and steel. 4,260,413, Cl. 75-58.000.
Freitag, Dieter: *See*—
Medem, Harald; Freitag, Dieter; and Reinking, Klaus, 4,260,695, Cl. 525-466.000.
Schmidt, Manfred; Kemperman, Theo; Freitag, Dieter; Fries, Hermann; and Esch, Erich, 4,260,704, Cl. 525-501.000.
French, Harry C.; Lapinski, John R.; and MacCready, John J., to J. H. J. Company, Ltd. Flexible truck storage accessory and gun carrier. 4,260,091, Cl. 224-311.000.
Frick, Charles E.: *See*—
Moss, Jack R.; Sugar, John W.; Riemer, Ronald A.; Frick, Charles E.; and Dillon, Ronald D., 4,260,490, Cl. 210-620.000.
Friedrich Wilh. Schwing GmbH: *See*—
Haas, Manfred, 4,260,338, Cl. 417-346.000.
Fries, Hermann: *See*—
Schmidt, Manfred; Kemperman, Theo; Freitag, Dieter; Fries, Hermann; and Esch, Erich, 4,260,704, Cl. 525-501.000.
Fritz, Adolf: *See*—
Leussink, Reinhard; Metger, Manfred; and Fritz, Adolf, 4,259,934, Cl. 123-424.000.
Frohardt, Steven P. Variable speed drive. 4,260,386, Cl. 474-72.000.
Frohbach, Hugh F.; Myers, Robert E.; Peppers, Norman A.; Siwecki, Thomas L.; Schaefer, Louis F.; and Macovski, Albert, to Laser-File Inc. Color television encoding and decoding system. 4,261,007, Cl. 358-5.000.
Frolov, Konstantin V.: *See*—
Belyanin, Petr N.; Frolov, Konstantin V.; Kobrinsky, Aron E.; Korendyasev, Alfred I.; Rozin, Boris S.; Salamandra, Boris L.; Sokolovsky, Felix P.; Stolin, Jury V.; and Tyves, Leonid I., 4,259,876, Cl. 74-469.000.
Frommelt, Wolfgang: *See*—
Barnert, Eike; Frommelt, Wolfgang; and Zimmer, Erich, 4,259,925, Cl. 118-716.000.
Frotschner, Eberhard; and Offterdinger, Hans-Georg, to Daimler-Benz Aktiengesellschaft. Impeller blade for a hydrodynamic torque converter. 4,260,330, Cl. 416-180.000.
Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, to Hoffmann-La Roche Inc. Intermediates for triazolobenzazepines. 4,260,772, Cl. 548-255.000.
Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, to Hoffmann-La Roche Inc. Intermediates for triazolobenzazepines. 4,260,773, Cl. 548-255.000.
Fuji Photo Film Co., Ltd.: *See*—
Fukui, Takashi, 4,260,997, Cl. 346-108.000.
Fukui, Takashi, 4,260,998, Cl. 346-108.000.
Shirahata, Ryuji; Kitamoto, Tatsuji; Yamada, Yasuyuki; and Akashi, Goro, 4,260,466, Cl. 204-192.00M.
Fuji Xerox Co., Ltd.: *See*—
Kawamura, Michio; Kato, Takeshi; Ohira, Kouji; Nishimura, Katsusuke; and Mitsui, Kazuaki, 4,260,878, Cl. 235-92.0AC.
Fujii, Kozo: *See*—
Umemura, Sumio; Matsui, Kanenobu; Ikeda, Yoshinari; Masunaga, Katsuro; Kadota, Takumi; Fujii, Kozo; Nishihira, Keigo; and Matsuda, Masaoki, 4,260,810, Cl. 560-204.000.
Fujino, Hitoshi; and Tsutsui, Kotaroh, to Alps Electric Co., Ltd. Remote operation device. 4,260,866, Cl. 200-331.000.
Fujitsu Fanuc Limited: *See*—
Kobayashi, Kengo; and Sawada, Yasunobu, 4,260,986, Cl. 340-680.000.

Fujiwara, Sigeharu: *See*—
Mayumi, Masakatsu; Mitooka, Kenji; and Fujiwara, Sigeharu, 4,260,445, Cl. 156-276.000.
Fujiwara, Takashi: *See*—
Fukuda, Kotaro; Okamoto, Yosinori; Shimada, Masakatsu; Kato, Toshiaki; Tabuchi, Katsuhiko; Shimura, Makoto; and Fujiwara, Takashi, 4,259,965, Cl. 128-640.000.
Fujiwara, Tatsuo; Watanabe, Masayasu; Yabumoyo, Mikio; Kanemori, Takaaki; and Seo, Hiroshi, to Toyo Seikan Kaisha, Ltd. Plastic dispensing apparatus. 4,260,356, Cl. 425-311.000.
Fukuda, Kiyoto: *See*—
Harada, Masato; Ishigaki, Yoshikatsu; Yamada, Sadahiko; Suzuki, Atsushi; Masuda, Jun; Hamazaki, Tadamitsu; Yoshida, Toshiaki; and Fukuda, Kiyoto, 4,260,723, Cl. 526-115.000.
Fukuda, Kotaro; Okamoto, Yosinori; Shimada, Masakatsu; Kato, Toshiaki; Tabuchi, Katsuhiko; Shimura, Makoto; and Fujiwara, Takashi, to TDK Electronics Co., Ltd. Skin electrode. 4,259,965, Cl. 128-640.000.
Fukuda, Shigeho: *See*—
Takano, Hideo; Shimohori, Yukio; and Fukuda, Shigeho, 4,260,351, Cl. 425-113.000.
Fukuhara, Toru, to Nippon Kogaku K.K. Diaphragm mechanism of a photographic lens. 4,260,233, Cl. 354-274.000.
Fukui, Takashi, to Fuji Photo Film Co., Ltd. Recording device. 4,260,997, Cl. 346-108.000.
Fukui, Takashi, to Fuji Photo Film Co., Ltd. Recording device. 4,260,998, Cl. 346-108.000.
Fukuma, Yositaka: *See*—
Nagasaka, Takakazu; Fukuma, Yositaka; and Mochizuki, Daisuke, 4,261,036, Cl. 364-405.000.
Fuller Company: *See*—
Warshawsky, Jay, 4,260,369, Cl. 432-3.000.
Fulop, Gabor F.; Betz, Jacob F.; Meyers, Peter V.; and Doty, Mitchell E., to Ametek, Inc. CdTe Schottky barrier photovoltaic cell. 4,260,427, Cl. 136-255.000.
Fulton, Robert E., Jr. Combination package comprising a loose leaf book, a plurality of transparent plastic frames, and means for hanging the same. 4,259,799, Cl. 40-159.000.
Furuichi, Katsushi: *See*—
Honma, Toshio; Furuichi, Katsushi; Murakami, Katsumi; and Tomosada, Masahiro, 4,260,241, Cl. 355-14.00R.
Fusser, Rolf: *See*—
Bach, Walter; Blumhardt, Rainer; Fusser, Rolf; and Ruckert, Karl-Heinz, 4,259,936, Cl. 123-556.000.
G.A.O. Gesellschaft fur Automation und Organisation mbH: *See*—
Mitzel, Wilhelm, 4,260,146, Cl. 271-94.000.
Gabr, Saad Z. M., to A.R.D. Technical Assistance and Engineering Services International Anstalt. Phonographic source. 4,260,163, Cl. 369-266.000.
Gaensslen, Hans: *See*—
Eisenlohr, Karl H.; and Gaensslen, Hans, 4,260,472, Cl. 208-8.0LE.
GAF Corporation: *See*—
Bennett, Frank P., 4,260,247, Cl. 355-45.000.
Gruber, Bruce A.; and Lorenz, Donald H., 4,260,809, Cl. 560-138.000.
Lorenz, Donald H.; and Gruber, Bruce A., 4,260,768, Cl. 548-261.000.
Gailitis, Adolph R., to Summit Packaging Systems, Inc. Continuous spray device for aerosol valves. 4,260,080, Cl. 222-402.140.
Galatha, Matthew J.; Rohrer, Gene D.; and Squires, John J., to International Business Machines Corporation. Unit record reader. 4,260,879, Cl. 235-449.000.
Gancy, Alan B.: *See*—
Karsay, Bela I.; Sturtevant, Robert L.; and Gancy, Alan B., 4,260,846, Cl. 585-730.000.
Ganellin, Charon R.: *See*—
Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R., 4,260,744, Cl. 544-8.000.
Gardner, Horace L.: *See*—
Engelberger, Joseph F.; Lindbom, Torsten H.; Dunne, Maurice J.; Perzley, William; Roberts, Wilbur N.; and Gardner, Horace L., 4,260,940, Cl. 318-562.000.
Engelberger, Joseph F.; Lindbom, Torsten H.; Dunne, Maurice J.; Perzley, William; Roberts, Wilbur N.; and Gardner, Horace L., 4,260,941, Cl. 318-562.000.
Garner, Lloyd L., to Smith International, Inc. Bearing structure for a rotary rock bit. 4,260,203, Cl. 308-8.200.
Garrett Corporation, The: *See*—
Silver, Alexander, 4,260,921, Cl. 310-156.000.
Garsite Products, Inc.: *See*—
Kornahrens, Herman, 4,260,173, Cl. 280-421.000.
Gas Research Institute: *See*—
Happel, John; and Hnatow, Miguel A., 4,260,553, Cl. 260-449.00M.
Gaston, Harold W.: *See*—
Glaser, Donald J.; and Gaston, Harold W., 4,259,814, Cl. 51-122.000.
Gaughan, Edmund J., to Stauffer Chemical Company. Sulfonylurea herbicidal antidotes. 4,260,824, Cl. 564-42.000.
Gavin, David F.: *See*—
Milnes, Frank J.; Bucko, Robert J.; and Gavin, David F., 4,260,505, Cl. 252-77.000.
Gazda, Chester T.: *See*—
Lalikos, James M.; Gazda, Chester T.; and O'Melia, Lawrence, 4,259,989, Cl. 138-109.000.
Gebr. Eickhoff Maschinenfabrik und Eisengeisserei m.b.H.: *See*—
Weber, Karl-Heinz, 4,260,191, Cl. 299-1.000.
Gebruder Trox, Gesellschaft mit beschrankter Haftung: *See*—
Finkelstein, Wolfgang; Riegel, Hans; and Kurzhals, Gerhard, 4,259,898, Cl. 98-40.00D.
Gebrueder Buehler AG: *See*—
Keller, Alois, 4,260,481, Cl. 209-315.000.
Kummer, Emanuel, 4,260,263, Cl. 356-448.000.
Geh, Robert E.: *See*—
Morgan, C. Baird, Jr.; Alexy, Fred H.; and Geh, Robert E., 4,259,793, Cl. 36-125.000.
Gehl Company: *See*—
Campbell, Hallis D.; Burrough, Donald E.; and Seefeld, Dean E., 4,259,900, Cl. 100-88.000.
Gehrig, Lane: *See*—
Thew, Donald G.; and Gehrig, Lane, 4,260,575, Cl. 264-154.000.
Gehrmann, Klaus: *See*—
Erpenbach, Heinz; Gehrmann, Klaus; and Joest, Herbert, 4,260,520, Cl. 252-437.000.
Gelin, Jean: *See*—
Dachert, Francois; Gelin, Jean; and Ropars, Raymond, 4,260,991, Cl. 343-756.000.
Gendelman, Bernard: *See*—
Weintraub, Morton; Waxman, Elliot; and Gendelman, Bernard, 4,261,006, Cl. 358-3.000.
Gene Fowler and Friends, Inc.: *See*—
Fowler, Eugene W., 4,260,444, Cl. 156-252.000.
General Electric Company: *See*—
Armor, Anthony F.; Darby, William L.; and Anderson, James M., 4,260,327, Cl. 415-200.000.
Bovenkerk, Harold P., 4,260,397, Cl. 51-307.000.
Ching, Ta-Yen, 4,260,719, Cl. 528-196.000.
Ching, Ta-Yen, 4,260,732, Cl. 528-192.000.
Gross, Robert S.; and Wood, Don C., 4,260,215, Cl. 339-258.00F.
Hallgren, John E., 4,260,802, Cl. 560-71.000.
Hatch, Burton D., 4,260,922, Cl. 310-178.000.
Koshoffer, John M.; Ekstedt, Edward E.; and Stamm, Edward I., 4,259,842, Cl. 60-757.000.
Kotski, Edward J.; and Horbal, Paul J., 4,260,213, Cl. 339-111.000.
Liu, Ping Y., 4,260,693, Cl. 525-148.000.
Loucks, George R.; and Williams, Frank J., III, 4,260,733, Cl. 528-219.000.
Peroutky, Donald C., 4,260,269, Cl. 400-121.000.
Russell, John N.; Smith, David W.; and McMullen, Joseph C., 4,259,837, Cl. 60-39.550.
Salem, Robert J., 4,260,928, Cl. 310-335.000.
Temple, Victor A. K., 4,261,000, Cl. 357-38.000.
Temple, Victor A. K., 4,261,001, Cl. 357-38.000.
Walters, Robert B.; and Wilkus, Edward V., 4,260,661, Cl. 428-389.000.
Wilcox, Albert F.; Wood, Don C.; and Wagner, Richard H., 4,260,975, Cl. 336-65.000.
Will, Fritz G., 4,260,874, Cl. 219-290.000.
Yartz, Johnny W., 4,260,278, Cl. 403-260.000.
Yonezawa, Masaharu; and Hatanaka, Masayuki, 4,260,536, Cl. 260-37.0SB.
General Foods Corporation: *See*—
Mitchell, William A.; and Seidel, William C., 4,260,642, Cl. 426-579.000.
Rispoli, Joseph M.; and Shaw, Janice R., 4,260,637, Cl. 426-96.000.
General Motors Corporation: *See*—
Dolinski, Stanley R.; and DeHart, Howard L., 4,259,774, Cl. 29-263.000.
Nels, Terry E., 4,260,047, Cl. 192-70.140.
Pflughaupt, Rolf; Arnold, Willi; and Hellener, Gerhard, 4,260,177, Cl. 280-668.000.
Rieck, Gerlad C.; and Malarz, Antoni J., 4,259,863, Cl. 73-862.400.
General Refractories Company: *See*—
Brodmann, Franz J.; and Staut, Ronald, 4,260,872, Cl. 219-270.000.
General Tire & Rubber Company, The: *See*—
Aggarwal, Sundar L.; Hargis, Ivan G.; Livigni, Russell A.; and Fabris, Hubert J., 4,260,519, Cl. 252-431.00L.
Aggarwal, Sundar L.; Hargis, Ivan G.; Livigni, Russell A.; and Fabris, Hubert J., 4,260,712, Cl. 526-181.000.
Hein, Richard D., 4,260,279, Cl. 404-74.000.
Georget, Hubert: *See*—
Touzard, Jean-Pierre; and Georget, Hubert, 4,260,953, Cl. 330-279.000.
Georgiev, Georgi M.: *See*—
Koychev, Todor Y.; Georgiev, Georgi M.; Lazov, Lyuben K.; and Valchev, Alexander Y., 4,259,919, Cl. 118-47.000.
Geosource Inc.: *See*—
Lockett, James F., 4,260,062, Cl. 209-582.000.
Gerdes, Heinrich D., to Northwood, Sadie M. Fireplace construction for mobile homes. 4,259,941, Cl. 126-120.000.
Geyer, Charles J., Jr; and White, Ben E., to Fiber Associates, Inc. Process and apparatus for preparing a homogeneous solution of xanthated alkali cellulose. 4,260,739, Cl. 536-61.000.
Ghahramani, Bahador. Eye depth perception testing apparatus. 4,260,226, Cl. 351-3.000.
Ghosh, Anil C.: *See*—
Razdan, Raj K.; and Ghosh, Anil C., 4,260,617, Cl. 424-260.000.
Giani, Gian G.: *See*—
Baiocchi, Paolo; and Giani, Gian G., 4,260,564, Cl. 264-2.200.
Gibson, Jacob J., to Technology Resources, Inc. Method and combined test elements for detection of heme. 4,260,393, Cl. 23-230.00B.

Gilman, Michael; and Rushton, Robert M., to Service (Engineers) Limited. Sponges for use in removing seams from clay handles. 4,260,354, Cl. 425-227.000.

Girgensohn, Bjoern: *See—*
Linhart, Friedrich; Girgensohn, Bjoern; Reissenweber, Gernot; and Hickmann, Eckhard, 4,260,562, Cl. 564-300.000.

Girling Limited: *See—*
Brearley, Malcolm; and White, Alfred. K., 4,260,200, Cl. 303-97.000.
Farr, Glyn P., 4,260,201, Cl. 303-99.000.

Gist-Brocades N.V.: *See—*
Bose, Ajay K., 4,260,743, Cl. 542-442.000.

Givaudan Corporation: *See—*
Kaiser, Roman; and Naegeli, Peter, 4,260,526, Cl. 252-522.00R.

Glanvill, Keith B.: *See—*
Falck, John B.; Glanvill, Keith B.; and Reid, John N., 4,260,983, Cl. 340-572.000.

Glanville, Gerald S.: *See—*
King, Donald L.; and Glanville, Gerald S., 4,259,777, Cl. 29-526.00R.

Glaser, Donald J.; and Gaston, Harold W., to Glendo Corporation. Tool sharpening machine. 4,259,814, Cl. 51-122.000.

Glassman, Donald: *See—*
Didycz, William J.; Glassman, Donald; Maier, Edward E.; and Saniga, George T., 4,260,462, Cl. 203-22.000.

Gleason Works, The: *See—*
Ryan, Arthur B.; and Spear, Gilmore M., 4,260,299, Cl. 407-115.000.

Glemza, Rimantas, to W. R. Grace & Co. Compositions for polishing silicon and germanium. 4,260,396, Cl. 51-298.000.

Glendo Corporation: *See—*
Glaser, Donald J.; and Gaston, Harold W., 4,259,814, Cl. 51-122.000.

Gloucester Engineering Co., Inc.: *See—*
Houle, Philip J.; and Oliver, Robert G., 4,260,147, Cl. 271-182.000.

Gluckin, Gerald: *See—*
Krug, Herbert A.; and Gluckin, Gerald, 4,259,749, Cl. 2-244.000.

Gmohling, Werner: *See—*
Freissmuth, Alfred; Gmohling, Werner; and Rock, Heinrich, 4,260,413, Cl. 75-58.000.

Gobran, Ramsis, to Minnesota Mining and Manufacturing Company. Pressure-sensitive tape having a plurality of adhesive layers. 4,260,659, Cl. 428-217.000.

Goldmann, Wolf; and Rother, Wolfgang, to Krupp Polysius AG. Process for the heat-treatment of fine grained material. 4,260,370, Cl. 432-14.000.

Goldwasser, David J.: *See—*
Farrissey, William J., Jr.; Goldwasser, David J.; and Onder, Kemal B., 4,260,718, Cl. 528-60.000.

Gollnick, Cyril R., to Leach Company. Refuse collection vehicle. 4,260,316, Cl. 414-501.000.

Golze, Richard R. Roof top carrier. 4,260,314, Cl. 414-462.000.

Gonzalez, Carlos: *See—*
Kinsey, Ennis W., Jr.; Gonzalez, Carlos; and Cox, James T., 4,259,975, Cl. 137-1.000.

Goodbar, Reid C., to Riegel Textile Corporation. Multi-layer absorbent pad for disposable absorbent articles and process for producing same. 4,259,958, Cl. 128-287.000.

Goodrich, Donald W.: *See—*
Saccomano, Michael L.; Washburn, Jerry R.; Goodrich, Donald W.; Wagner, Victor A.; and Kaufman, Phillip A., 4,261,034, Cl. 364-200.000.

Goodwin, John R., to Rolls-Royce Limited. Root attachment for a gas turbine engine blade. 4,260,331, Cl. 416-219.00R.

Goodyear Tire & Rubber Company, The: *See—*
Parker, Dane K.; and Kline, Richard H., 4,260,832, Cl. 568-784.000.

Gorman, Harold R.; and Plocki, Leonard R., to PPG Industries, Inc. Method for reducing roll marking of glass sheets. 4,260,404, Cl. 65-27.000.

Gorman, Joseph G.: *See—*
Wayland, Paul O.; Gorman, Joseph G.; and Voshall, Roy E., 4,260,864, Cl. 200-144.00B.

Goschke, Richard: *See—*
Bernasconi, Raymond; Ferrini, Pier G.; Goschke, Richard; and Gosteli, Jacques, 4,260,779, Cl. 549-52.000.

Gosteli, Jacques: *See—*
Bernasconi, Raymond; Ferrini, Pier G.; Goschke, Richard; and Gosteli, Jacques, 4,260,779, Cl. 549-52.000.

Gould, George D., to Chevron Research Company. Method for the recovery and transport of the chemical and energy value of light hydrocarbons. 4,259,976, Cl. 137-13.000.

Gould Inc.: *See—*
Berdan, Betty L.; and Luce, Betty M., 4,260,449, Cl. 156-628.000.
DiMarco, Bernard, 4,260,861, Cl. 200-42.00T.

Graaf, Max V.; and Mang, Josef, to Emerson Electric Co. Cam-actuated swing turnover and transfer placing apparatus. 4,260,324, Cl. 414-735.000.

Grade, Reinhardt: *See—*
Berrer, Dagmar; Lorenz, Joachim; and Grade, Reinhardt, 4,260,753, Cl. 544-208.000.

Graham, Theodore D. Sprue bushing for injection molding machine. 4,260,348, Cl. 425-144.000.

Grahame, Robert E., Jr.: *See—*
Harrison, William A.; Hubbard, Winchester L.; and Grahame, Robert E., Jr., 4,260,765, Cl. 546-280.000.
Strunk, Richard J.; Hubbard, Winchester L.; and Grahame, Robert E., Jr., 4,260,552, Cl. 260-429.700.

Grain Processing Corporation: *See—*
Lindsay, William F.; Meintrup, Robert A.; and Slawny, Howard J., 4,260,443, Cl. 156-220.000.

Granda, Edward J.: *See—*
Trenkle, Robert W.; Mookherjee, Braja D.; Hall, John B.; Kasper, Robin; Vock, Manfred H.; Schreck, Ronald; Granda, Edward J.; and Vinals, Joaquin F., 4,260,527, Cl. 252-522.00R.

Grandjacques, B.: *See—*
Letort, C. A.; Llop, Helenio; and Grandjacques, B., 4,260,260, Cl. 356-385.000.

Grandmaison, John P.: *See—*
Lemay, Richard A.; Huettner, Robert E.; Grandmaison, John P.; and Vernon, John H., 4,261,033, Cl. 364-200.000.

Graser, Reinhold, to Hoechst Aktiengesellschaft. Process for the manufacture of ammonium sulfamate. 4,260,593, Cl. 423-388.000.

Green, William D., Jr. Smoke generating and dispensing apparatus and method. 4,259,970, Cl. 131-330.00R.

Greenawalt, Thomas H.; and Kimmet, Daniel E., to Aeroquip Corporation. Fluid coupling using staple interlock. 4,260,184, Cl. 285-305.000.

Greenberg, Mishel: *See—*
Chernack, Milton P.; and Greenberg, Mishel, 4,259,951, Cl. 128-200.140.

Greene, Carmine M.: *See—*
Barton, Nancy K.; Greene, Carmine M.; and Rapkin, Myron C., 4,260,579, Cl. 422-56.000.

Greene, Richard K.: *See—*
Hannon, Martin J.; and Greene, Richard K., 4,260,066, Cl. 215-12.00R.

Greenwood, William S., to Thomas & Betts Corporation. Punch and crimp apparatus. 4,259,778, Cl. 29-560.000.

Gregorio, Angelo, to Fiat Trattori S.p.A. Device for automatically lifting and rapidly lowering tractor implements. 4,260,025, Cl. 172-12.000.

Greig, George; and Broadribb, Michael P., to British Petroleum Company Limited, The. Treatment of oily sludge. 4,260,489, Cl. 210-771.000.

Grein, Lutz: *See—*
Reimpell, Uwe; Reiter, Reinhard; and Grein, Lutz, 4,259,979, Cl. 137-315.000.

Greubel, Waldemar; and Quella, Ferdinand, to Siemens Aktiengesellschaft. Device for collecting light and method of manufacturing such device. 4,260,219, Cl. 350-96.100.

Greve, Heinz; and Wahle, Gunter, to Hauni-Werke Korber & Co. KG. Method and apparatus for banding tows of filamentary material. 4,259,769, Cl. 28-283.000.

Grgurich, William A., to Caterpillar Tractor Co. Springless fuel injection nozzle. 4,260,112, Cl. 239-533.800.

Grieder, Alfred; and Coers, Klaus-Jurgen, to Ciba-Geigy Corporation. Process for the preparation of N-(1'-alkoxycarbonylethyl)-2,6-dialkylanilines. 4,260,782, Cl. 560-43.000.

Grier, Nathaniel: *See—*
Dybas, Richard A.; Grier, Nathaniel; and Witzel, Bruce E., 4,260,760, Cl. 544-396.000.

Griffin, Andrew J.: *See—*
Cannon, Robert L.; and Griffin, Andrew J., 4,259,966, Cl. 128-706.000.

Griffiths, William C., to Midland-Ross Corporation. Chemical dehumidification system which utilizes a refrigeration unit for supplying energy to the system. 4,259,849, Cl. 62-271.000.

Grilletto, Carlo; and Vowinkel, Frank C., to RCA Corporation. Measurement of a gas constituent by a mass spectrometer. 4,260,886, Cl. 250-288.000.

Groenefeld, Heinz, to Honeywell Inc. Rotary spherical plug valve. 4,260,129, Cl. 251-77.000.

Groothuis, Gerrit J.: *See—*
Boiten, Ebbe; Groothuis, Gerrit J.; and de Vries, Jochem J., 4,259,781, Cl. 30-43.600.

Gross, Glenn M., to Norlin Industries, Inc. Tone generation system employing triangular waves. 4,259,888, Cl. 84-1.220.

Gross, James R. Document holder. 4,260,090, Cl. 224-277.000.

Gross, Robert S.; and Wood, Don C., to General Electric Company. Electrical fuseholder. 4,260,215, Cl. 339-258.00F.

Grove Valve and Regulator Company: *See—*
Ripert, Roger L., 4,260,134, Cl. 251-367.000.

Groves, William A.; and Lentine, Frank N., to Sybron Corporation. Endodontic instrument. 4,260,379, Cl. 433-102.000.

Gruber, Bruce A.; and Lorenz, Donald H., to GAF Corporation. Copolymerizable, ultraviolet light absorber 4-alkoxy-2'-acryloxy benzazines. 4,260,809, Cl. 560-138.000.

Gruber, Bruce A.: *See—*
Lorenz, Donald H.; and Gruber, Bruce A., 4,260,768, Cl. 548-261.000.

Gruett, Glenn H. Combination filter and softener unit. 4,260,487, Cl. 210-190.000.

GTE Sylvania, N.V.: *See—*
Hens, Theo; and Wauters, Remi, 4,260,930, Cl. 313-481.000.

Gubelius,-Heinz-G.: *See—*
Sawatzki, Rolf; Gubelius, Heinz-G.; Heienbrock, Joachim; Halberschmidt, Friedrich; Audi, Josef; and Schwarzenberg, Norbert, 4,260,347, Cl. 425-123.000.

Guerini, Albert: *See—*
Lun Ho, Bin; and Guerini, Albert, 4,260,208, Cl. 312-242.000.

Guile, Donald L.: *See—*
Corbett, Daniel W.; and Guile, Donald L., 4,260,406, Cl. 65-43.000.

Guirriec, Louis, to Fonderie de L'Yonne, one half interest. Transmission mechanism having a variable transmission ratio. 4,259,874, Cl. 474-28.000.

Gulack, Max A. Educational and recreational mathematical kit in the form of a set of square sticks. 4,260,385, Cl. 434-208.000.

Gulbins, Erich: *See*—
Kempter, Fritz E.; Hartmann, Heinrich; and Gulbins, Erich, 4,260,697, Cl. 525-484.000.

Gulf Research & Development Company: *See*—
Carr, Norman L.; and McGinnis, Edgar L., 4,260,485, Cl. 210-728.000.

Gullicksen, Spencer O.; and Roberts, Thomas A., to Tracor, Inc. Stabilized optical system with off-axis stabilizer. 4,260,218, Cl. 350-16.000.

Gum, Clarence; R.: *See*—
O'Donnell, Albert E.; and Gum, Clarence; R., 4,260,844, Cl. 585-523.000.

Gurley, Derrel G.: *See*—
Nelson, Wayne F.; and Gurley, Derrel G., 4,260,020, Cl. 166-305.00R.

Gutekunst, Robert W.: *See*—
Poppe, Wassily; Craddock, Charles F.; Gutekunst, Robert W.; Ladd, Robert G.; and Mager, Sue A., 4,260,567, Cl. 264-25.000.

Guthlein, Werner: *See*—
Rittersdorf, Walter; Guthlein, Werner; Werner, Wolfgang; Rey, Hanz-Georg; and Rieckmann, Peter, 4,260,777, Cl. 549-33.000.

H. R. Turner (Willenhall) Limited: *See*—
Holloway, Ian P.; and Lloyd, Raymond A., 4,260,190, Cl. 297-361.000.

Haag, Werner O.: *See*—
Chen, Nai Y.; Haag, Werner O.; and Huang, Tracy J., 4,260,839, Cl. 585-257.000.

Haarmann, Walter: *See*—
Roch, Josef; Muller, Erich; Narr, Berthold; Nickl, Josef; and Haarmann, Walter, 4,260,621, Cl. 424-267.000.

Haas, Manfred, to Friedrich Wilh. Schwing GmbH. Multicylinder pump for viscous liquids. 4,260,338, Cl. 417-346.000.

Haas, Peter; Blahak, Johannes; and Wiedermann, Rolf, to Bayer Aktiengesellschaft. Hexahydrotriazine carboxylates and the use thereof as catalysts in the production of polyisocyanurate plastics. 4,260,754, Cl. 544-215.000.

Habiger, Cyril W., to Caterpillar Tractor Co. Control valve with improved centering and detent mechanisms. 4,260,132, Cl. 251-297.000.

Hack, Eugen. Hinge lock. 4,260,045, Cl. 192-8.00R.

Hackney, Stanley, to United Kingdom Atomic Energy Authority. Apparatus for transferring toxic and radioactive materials. 4,260,312, Cl. 414-292.000.

Hadden, David M.; and Micko, Eric S., to Delphian Corporation. Automatic portable pH meter and method with calibration receptacle. 4,260,950, Cl. 324-438.000.

Haderer, Norman G.; and Harris, Robert D., to Westinghouse Electric Corp. Metering die. 4,260,650, Cl. 427-54.100.

Hagemann, Hans J.; and Hunten, Siegfried, to U.S. Philips Corporation. Method of producing a dielectric having a perowskite structure. 4,260,663, Cl. 428-472.000.

Hahn, Kurt L.: *See*—
Blake, Edward W.; and Hahn, Kurt L., 4,260,310, Cl. 414-118.000.

Haigh, David G.; and Saraga, Wolja, to National Research Development Corporation. Active filter network utilizing positive impedance converters. 4,260,968, Cl. 333-214.000.

Halberschmidt, Friedrich: *See*—
Sawatzki, Rolf; Gubelius, Heinz-G.; Heienbrock, Joachim; Halberschmidt, Friedrich; Audi, Josef; and Schwarzenberg, Norbert, 4,260,347, Cl. 425-123.000.

Halberstadt, Johan P. Article of outer footwear. 4,259,792, Cl. 36-28.000.

Halcon Research and Development Corp.: *See*—
Benjamin, Bruce W., 4,260,821, Cl. 562-532.000.
Harvey, Robert J., 4,260,781, Cl. 560-24.000.

Hall, John B.: *See*—
Trenkle, Robert W.; Mookherjee, Braja D.; Hall, John B.; Kasper, Robin; Vock, Manfred H.; Schreck, Ronald; Granda, Edward J.; and Vinals, Joaquin F., 4,260,527, Cl. 252-522.00R.
Wilson, Richard A.; Mookherjee, Braja D.; Hall, John B.; and Stork, Gilbert, 4,260,830, Cl. 568-485.000.

Hall, Michael C.: *See*—
Carrington, Roy; and Hall, Michael C., 4,260,740, Cl. 536-63.000.

Hall, Robert L. Keyless chuck. 4,260,169, Cl. 279-62.000.

Hall, Sture R.: *See*—
Mickelsson, Sven-Mikael; and Hall, Sture R., 4,260,307, Cl. 409-225.000.

Haller, Henry E., III: *See*—
Lugosi, Robert; Fechko, George J.; Male, Alan T.; Haller, Henry E., III; and Mole, Cecil J., 4,260,924, Cl. 310-213.000.

Hallgren, John E., to General Electric Company. Catalytic aromatic salicylate process. 4,260,802, Cl. 560-71.000.

Halliburton Company: *See*—
Baker, Eugene E.; and Carter, Ernest E., Jr., 4,260,164, Cl. 277-34.000.
Rao, Prabhakar P.; and Sutton, David L., 4,259,868, Cl. 73-597.000.

Halushka, Roman A.; and McGowan, George A., to Hughes Aircraft Company. Mechanical coupling. 4,260,180, Cl. 285-9.00M.

Hamade, Adib R.: *See*—
Brown, Paul M., Jr.; and Hamade, Adib R., 4,260,911, Cl. 307-310.000.

Hamanishi, Yoshinari, to Nippon Kogaku K.K. Lens system for photographing objects from infinity to a very short distance. 4,260,223, Cl. 350-465.000.

Hamano, Seiichi: *See*—
Yamada, Koichi; Nakazato, Kunio; Horinouchi, Kazuo; Hamano, Seiichi; and Mouri, Masahide, 4,260,524, Cl. 252-463.000.

Hamazaki, Tadamitsu: *See*—
Harada, Masato; Ishigaki, Yoshikatsu; Yamada, Sadahiko; Suzuki, Atsushi; Masuda, Jun; Hamazaki, Tadamitsu; Yoshida, Toshiaki; and Fukuda, Kiyoto, 4,260,723, Cl. 526-115.000.

Hamel, Roland R. Windmill. 4,260,328, Cl. 416-17.000.

Hamer, David E.: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Paaren, Herbert E.; and Hamer, David E., 4,260,549, Cl. 260-397.200.

Hamprecht, Gerhard: *See*—
Jacobs, Peter; Mangold, Dietrich; and Hamprecht, Gerhard, 4,260,559, Cl. 260-513.600.
Jacobs, Peter; Hamprecht, Gerhard; and Mangold, Dietrich, 4,260,560, Cl. 260-543.00R.

Hanmer, Richard A., to Dow Chemical Company, The. Polymer-bonded crocidolite asbestos diaphragms and method for forming same. 4,260,453, Cl. 162-105.000.

Hannon, Martin J.; and Greene, Richard K., to Celanese Corporation. Method of powder coating a glass container and product produced. 4,260,066, Cl. 215-12.00R.

Hanscom, Genevieve I.: *See*—
Crawford, Lynn D., 4,259,780, Cl. 29-808.000.
Crawford, Lynn D., 4,259,780, Cl. 29-808.000.

Hanses, Mark J., to Standard Oil Company (Indiana). Method of and apparatus for high speed production of absorbent pad lined rectangular sloping walled polystyrene foam meat packaging trays. 4,260,311, Cl. 414-129.000.

Hanson, John G.; and Smith, Merrill M., to American Biltrite, Inc. Asbestos-free vinyl floor tile composition and method for its manufacture. 4,260,534, Cl. 260-31.80R.

Happel, John; and Hnatow, Miguel A., to Gas Research Institute. Alumina-containing methanation catalysts. 4,260,553, Cl. 260-449.00M.

Harada, Masato; Ishigaki, Yoshikatsu; Yamada, Sadahiko; Suzuki, Atsushi; Masuda, Jun; Hamazaki, Tadamitsu; Yoshida, Toshiaki; and Fukuda, Kiyoto, to Chisso Corporation. Method for producing olefin polymers. 4,260,723, Cl. 526-115.000.

Hardy, Kenneth D.; and Burton, George, to Beecham Group Limited. Penicillins. 4,260,625, Cl. 424-271.000.

Harford, Jack R., to RCA Corporation. Temperature compensating bias circuit. 4,260,956, Cl. 330-289.000.

Hargis, Ivan G.: *See*—
Aggarwal, Sundar L.; Hargis, Ivan G.; Livigni, Russell A.; and Fabris, Hubert J., 4,260,519, Cl. 252-431.00L.
Aggarwal, Sundar L.; Hargis, Ivan G.; Livigni, Russell A.; and Fabris, Hubert J., 4,260,712, Cl. 526-181.000.

Harman, James R.; Larson, William M.; and Threat, J. B., to Eaton Corporation. Suspension hook assembly. 4,260,136, Cl. 254-380.000.

Harnisch, Horst, to Bayer Aktiengesellschaft. Heterocyclic dyestuffs. 4,260,776, Cl. 548-364.000.

Harrington, Wilfred H.: *See*—
Udall, William S.; and Harrington, Wilfred H., 4,260,006, Cl. 152-362.00R.

Harris Corporation: *See*—
Mebus, Henry R.; and Miaskoff, Leonard, 4,260,145, Cl. 270-54.000.
Piotrowski, Leo R., 4,260,431, Cl. 148-1.500.
Scharla-Nielsen, Hans, 4,261,054, Cl. 455-12.000.
Taylor, David L., 4,260,436, Cl. 148-174.000.

Harris, Edward, to Koppers Company, Inc. Device for cleaning coke oven doors. 4,259,760, Cl. 15-93.00A.

Harris, Robert D.: *See*—
Haderer, Norman G.; and Harris, Robert D., 4,260,650, Cl. 427-54.100.

Harris, Robert F.; and Wagener, Earl H., to Dow Chemical Company, The. Novel onium surfactants. 4,260,826, Cl. 568-11.000.

Harrison, William A.; Hubbard, Winchester L.; and Grahame, Robert E., Jr., to Uniroyal, Inc. 2-(3-Pyridyl)-5-thiazolecrrboxamides. 4,260,765, Cl. 546-280.000.

Hart, Gwyn G., to Daniel, John M. Contour miner. 4,260,195, Cl. 299-11.000.

Hartelius, Nils M., to AB Volvo. Shaft seal, intended for use at high temperatures. 4,260,165, Cl. 277-84.000.

Hartkopf, Heinz; and Lomberg, Ulrich, to Th. Kieserling & Albrecht. Apparatus for internally peeling metal tubes. 4,259,884, Cl. 82-1.500.

Hartman, Marvis E.: *See*—
Christenson, Roger M.; Bosso, Joseph F.; Hartman, Marvis E.; and Chang, Wen-Hsuan, 4,260,716, Cl. 528-45.000.

Hartmann, Heinrich: *See*—
Kempter, Fritz E.; Hartmann, Heinrich; and Gulbins, Erich, 4,260,697, Cl. 525-484.000.

Hartmann, Karl; Bartels, Klaus; and Kraffert, Erich, to Lever Brothers Company. Moulding food products. 4,260,640, Cl. 426-516.000.

Hartsough, Larry D.: *See*—
Dension, Dean R.; and Hartsough, Larry D., 4,260,649, Cl. 427-53.100.

Harvell, John T.: *See*—
Sarcia, Domenico S.; Harvell, John T.; and Lewis, Robert M., 4,259,844, Cl. 62-6.000.

Harvey, Robert J., to Halcon Research and Development Corp. Process for the manufacture of carbamates. 4,260,781, Cl. 560-24.000.

Hasegawa, Akira: *See*—
Yamaguchi, Akihiro; Kobayashi, Tadashi; Yamaguchi, Keizaburo; Osawa, Kisuke; Murakami, Hisamichi; Yamato, Noboru; and Hasegawa, Akira, 4,260,179, Cl. 282-27.500.
Hasegawa, Kensuke: *See*—
Motoda, Kenro; and Hasegawa, Kensuke, 4,260,319, Cl. 414-591.000.
Hashimoto, Mitsuru: *See*—
Sasaki, Masaomi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Tsutsui, Kyoji, 4,260,672, Cl. 430-72.000.
Hashizume, Naoki: *See*—
Watanabe, Risaburo; Ohtani, Masami; and Hashizume, Naoki, 4,260,343, Cl. 418-269.000.
Hasler, Werner: *See*—
Arendt, Klaus; Hasler, Werner; and Schaller, Karl-Heinz, 4,259,903, Cl. 101-93.030.
Hata, Kazuhiko: *See*—
Matsushima, Shunsuke; Hata, Kazuhiko; Mashita, Kentaro; Kanagawa, Shuichi; Nakao, Shinji; Nakai, Kiyoshi; and Kamio, Kunimasa, 4,260,831, Cl. 568-719.000.
Hatakeyama, Hideo: *See*—
Akiyama, Hiroyuki; Shimoyashiki, Nobuyoshi; Hatakeyama, Hideo; and Yamamoto, Toru, 4,260,572, Cl. 264-53.000.
Hatanaka, Masayuki: *See*—
Yonezawa, Masaharu; and Hatanaka, Masayuki, 4,260,536, Cl. 260-37.0SB.
Hatanaka, Takefumi, to Lifewell Corporation. Document shredder. 4,260,115, Cl. 241-236.000.
Hatano, Manabu: *See*—
Horie, Yoshihiro; Nagata, Kenzo; and Hatano, Manabu, 4,260,904, Cl. 307-113.000.
Hatch, Burton D., to General Electric Company. Integral collector pump for high speed machine. 4,260,922, Cl. 310-178.000.
Hathway, Randal B.: *See*—
Lundin, Robert S.; and Hathway, Randal B., 4,260,917, Cl. 310-71.000.
Hauni-Werke Korber & Co. KG: *See*—
Greve, Heinz; and Wahle, Gunter, 4,259,769, Cl. 28-283.000.
Hauser, Raimund: *See*—
Rollenitz, Leopold, 4,260,246, Cl. 355-45.000.
Hawker, Michael J., to Clayton Dewandre Company Limited: Spool type brake valves. 4,260,197, Cl. 303-52.000.
Hayasaka, Akio: *See*—
Itoh, Kazuo; Ogiue, Katsumi; and Hayasaka, Akio, 4,260,430, Cl. 148-1.500.
Hayashi, Hideaki, to Tokyo Magnetic Printing Company, Ltd. Magnetic recording reproducing apparatus. 4,261,023, Cl. 360-94.000.
Hayashi, Kazuo; and Takahashi, Fujio, to Nissan Motor Company, Limited; and Ikeda Bussan Co., Ltd. Apparatus to control the air flow in an automobile. 4,259,896, Cl. 98-2.030.
Hayashi, Yuzuru: *See*—
Taketani, Yutaka; Hayashi, Yuzuru; Kawaguchi, Takeyuki; Ono, Tomoyoshi; and Mori, Ko, 4,260,652, Cl. 427-245.000.
Hayashida, Yoshihiro: *See*—
Ando, Hiromi; Tateoka, Kiyoshi; and Hayashida, Yoshihiro, 4,259,893, Cl. 91-369.00B.
Hayden, Rodney, to TRW Inc. Resistive device sensor. 4,260,985, Cl. 340-635.000.
Haynes, William R.: *See*—
Truhan, Andrew; and Haynes, William R., 4,260,401, Cl. 55-339.000.
Hedgepeth, John M.: *See*—
United States of America, National Aeronautics and Space Administration; Hedgepeth, John M.; Coyner, John V.; and Crawford, Robert F., 4,259,825, Cl. 52-645.000.
Hefner, George R.: *See*—
Litel, James G.; and Hefner, George R., 4,260,376, Cl. 433-29.000.
Heienbrock, Joachim: *See*—
Sawatzki, Rolf; Gubelius, Heinz-G.; Heienbrock, Joachim; Halberschmidt, Friedrich; Audi, Josef; and Schwarzenberg, Norbert, 4,260,347, Cl. 425-123.000.
Heilman, Gregory S. Easel. 4,260,124, Cl. 248-449.000.
Hein, Richard D., to General Tire & Rubber Company, The. End seal for expansion joint sealing assembly. 4,260,279, Cl. 404-74.000.
Helix Technology Corporation: *See*—
Sarcia, Domenico S.; Harvell, John T.; and Lewis, Robert M., 4,259,844, Cl. 62-6.000.
Hellener, Gerhard: *See*—
Pflughaupt, Rolf; Arnold, Willi; and Hellener, Gerhard, 4,260,177, Cl. 280-668.000.
Hellriegel, Edmund, to Ford Motor Company. Elastic sealing and mounting strip. 4,259,823, Cl. 52-400.000.
Hemperly, William R., Jr.; and Singer, Harry A., to Armstrong Cork Company. Seam sealer applicator attachment. 4,260,273, Cl. 401-48.000.
Hendrickson, Thomas C. Plastic bags having drawstrings. 4,260,003, Cl. 150-11.000.
Henkel Corporation: *See*—
Floyd, Don E., 4,260,727, Cl. 528-45.000.
Henkel Kommanditgesellschaft auf Aktien: *See*—
Asbeck, Adolf; Pfeiffer, Hans F.; Plapper, Juergen; and Schmid, Rolf, 4,260,686, Cl. 435-265.000.
Henrick, Clive A.: *See*—
Anderson, Richard J.; Adams, Karen G.; and Henrick, Clive A., 4,260,633, Cl. 424-304.000.
Hens, Theo; and Wauters, Remi, to GTE Sylvania, N.V. Cathode ray tube getter having two arms connected to final electrode by insulating connector. 4,260,930, Cl. 313-481.000.
Henschel, Claude: *See*—
Kavesh, Sheldon; and Henschel, Claude, 4,260,416, Cl. 75-125.000.
Hercules Incorporated: *See*—
Cartwright, Richard V., 4,260,711, Cl. 526-153.000.
Herder, Robert R., to Asplundh Tree Expert Company. Safety device for brush chipper. 4,260,114, Cl. 241-37.500.
Hermecz, Istvan; Meszaros, Zoltan; Breining, Tibor; Virag, Sandor; Vasvari nee Debreczi, Lelle; Horvath, Agnes; Nagy, Gabor; Mandi, Attila; Szuts, Tamas; Bitteer, Istvan; and Sebestyen, Gyula, to Chinoin Gyogyszer es Vecyeszeti Termekek Gyara Rt. Antiallergic nitrogen bridge-head compounds. 4,260,612, Cl. 424-251.000.
Hernandez, Jose A., to Esquire, Inc. Wrap-around parabolic light fixture and method for manufacture. 4,261,030, Cl. 362-296.000.
Herring, James M., Jr., to Budd Company, The. Heating system for a railway car for utilizing waste heat from an engine. 4,260,103, Cl. 237-5.000.
Herron, William L.; and Newman, Albert L., to Singer Company, The. Latch for sewing machine cover. 4,260,207, Cl. 312-208.000.
Hertrich, Friedrich R., to Digital Equipment Corporation. Differential linear velocity transducer. 4,260,914, Cl. 310-27.000.
Herzer, Heinz, to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH. Process for decreasing crystal damages in the production of n-doped silicon by neutron bombardment. 4,260,448, Cl. 156-605.000.
Hestair Farm Equipment Limited: *See*—
Stocks, Richard A.; and Twell, David, 4,259,912, Cl. 111-77.000.
Hewitt, Deborah W.: *See*—
Ulrich, Ralph P.; and Hewitt, Deborah W., 4,260,425, Cl. 134-2.000.
Hewlett-Packard Company: *See*—
Lovelock, James E., 4,260,884, Cl. 250-324.000.
Hey, David G.; and Wheelhouse, Robert W., to Imperial Chemical Industries Limited. Cleaning composition. 4,260,510, Cl. 252-171.000.
Heymes, Rene; and Lutz, Andre, to Roussel Uclaf. Novel oximes. 4,260,747, Cl. 544-27.000.
Hickmann, Eckhard: *See*—
Linhart, Friedrich; Girgensohn, Bjoern; Reissenweber, Gernot; and Hickmann, Eckhard, 4,260,562, Cl. 564-300.000.
Hicks, John R., to Dupont Energy Management Corporation. System for monitoring utility usage. 4,261,037, Cl. 364-464.000.
Hideg, Laszlo; and Ernest, Robert P., to Ford Motor Company. Internal combustion engine control system. 4,259,932, Cl. 123-209.000.
Hilfiker, William K., to Reinforced Earth Company, The. Adjustable cap for retaining walls. 4,260,296, Cl. 405-284.000.
Hill, Garnett L.; Molnar, Antal T.; and Jehan, Henry I., Jr., to United States of America, Army. Obscuration device for tank gunners. 4,260,384, Cl. 434-16.000.
Hilti Aktiengesellschaft: *See*—
Theissig, Werner, 4,260,916, Cl. 310-50.000.
Hine, Edward K., Jr.; and Hine, Gregory S., to Hine-Snowbridge, Inc. Support device for bicycle handlebar pack. 4,260,086, Cl. 224-36.000.
Hine, Gregory S.: *See*—
Hine, Edward K., Jr.; and Hine, Gregory S., 4,260,086, Cl. 224-36.000.
Hine-Snowbridge, Inc.: *See*—
Hine, Edward K., Jr.; and Hine, Gregory S., 4,260,086, Cl. 224-36.000.
Hirn, Ferdinand; and Edlinger, Manfred, to Voest-Alpine Aktiengesellschaft. Road roller. 4,260,280, Cl. 404-122.000.
Hirsch, Hans-Jurgen: *See*—
Dannert, Horst; and Hirsch, Hans-Jurgen, 4,260,887, Cl. 250-315.200.
Hirt, Dieter; and Steigenberger, Richard, to Maschinenfabrik Augsburg-Nurnberg. Damping restraining bearing for supercritically operation rotors. 4,260,204, Cl. 308-9.000.
Hiruta, Toshio: *See*—
Komiyama, Katsuhiko; and Hiruta, Toshio, 4,261,049, Cl. 368-88.000.
Hisaka Works, Limited: *See*—
Sumitomo, Hiroyuki, 4,260,013, Cl. 165-75.000.
Hitachi Cables, Ltd.: *See*—
Takano, Hideo; Shimohori, Yukio; and Fukuda, Shigeho, 4,260,351, Cl. 425-113.000.
Hitachi, Ltd.: *See*—
Aida, Toshiyuki; Taguchi, Sadanori; Yuito, Isamu; Kawabe, Ushio; Yamamoto, Shigehiko; Honda, Yukio; Shibata, Norio; and Okano, Hiroshi, 4,260,665, Cl. 428-633.000.
Itoh, Kazuo; Ogiue, Katsumi; and Hayasaka, Akio, 4,260,430, Cl. 148-1.500.
Masuhara, Toshiaki; Minato, Osamu; Sakai, Yoshio; Sasaki, Toshio; Kubo, Masaharu; Nishimura, Kotaro; and Yasui, Tokumasa, 4,261,004, Cl. 357-51.000.
Nakamura, Tsutomu; and Umehara, Teruo, 4,260,920, Cl. 310-156.000.
Ohnishi, Makoto; and Shirasu, Hirotoshi, 4,261,051, Cl. 370-58.000.
Onoda, Seiichi; Yamada, Shoji; Minai, Yasuo; Maeda, Minoru; Kita, Shin; and Tanaka, Mitsuo, 4,260,883, Cl. 250-226.000.
Sindo, Isao; Matsuoka, Yoshio; and Yoshida, Kasumi, 4,260,580, Cl. 422-64.000.
Yamamoto, Hajime; and Shimoyashiki, Shigehiro, 4,259,861, Cl. 73-40.50R.

Hitachi Metals, Ltd.: *See*—
Nakamura, Tsutomu; and Umehara, Teruo, 4,260,920, Cl. 310-156.000.
Sasaki, Yoshitaka, 4,259,920, Cl. 118-116.000.
Hnatow, Miguel A.: *See*—
Happel, John; and Hnatow, Miguel A., 4,260,553, Cl. 260-449.00M.
Hobo, Sumiya; and Shioda, Nobuhiro, to Shioda Dental Manufacturing Co., Ltd. Dental articulator. 4,260,377, Cl. 433-58.000.
Hobson, Victor. Production of terry fabrics for towels. 4,259,994, Cl. 139-1.00R.
Hochheiser, Jerome S., to Anthony's Manufacturing Company, Inc. Dew point differential power controller. 4,260,876, Cl. 219-497.000.
Hochiki Corporation: *See*—
Honma, Hiroshi, 4,260,984, Cl. 340-630.000.
Yamauchi, Yukio; and Tanigawa, Takeshi, 4,260,981, Cl. 340-870.110.
Hodakowski, Leonard E.; and Koleske, Joseph V., to Union Carbide Corporation. Novel urethane-acrylate and radiation curable compositions. 4,260,703, Cl. 525-455.000.
Hoechst Aktiengesellschaft: *See*—
Bartmann, Wilhelm; and Konz, Elmar, 4,260,611, Cl. 424-250.000.
Bartmann, Wilhelm; Konz, Elmar; and Kruse, Hansjorg, 4,260,763, Cl. 546-144.000.
Beer, Ekkehard, 4,260,496, Cl. 210-780.000.
Bennoit, Horst; and Schmid, Dieter, 4,260,495, Cl. 210-772.000.
Dost, Gunter; and Bauer, Fritz, 4,260,631, Cl. 424-283.000.
Erpenbach, Heinz; Gehrmann, Klaus; and Joest, Herbert, 4,260,520, Cl. 252-437.000.
Franz, Raimund, 4,260,561, Cl. 260-544.00F.
Graser, Reinhold, 4,260,593, Cl. 423-388.000.
Kaiser, Karl; Willms, Robert; and Kuxdorf, Bernhard, 4,260,847, Cl. 585-833.000.
Raether, Wolfgang; Durckheimer, Walter; and Seidenath, Hans, 4,260,615, Cl. 424-257.000.
Thamm, Horst-Dieter; Knittel, Volker; Sommer, Werner; and Weckler, Gerhard, 4,260,422, Cl. 106-111.000.
Hoehn, Hans, to E. R. Squibb & Sons, Inc. 4-(2-(1H-Imidazol-1-ylmethyl)-1,3-dioxolan-4-yl)methoxypyrazolo(3,4-b)pyridines. 4,260,614, Cl. 424-256.000.
Hoehn, Hans, to E. R. Squibb & Sons, Inc. Antimicrobial imidazolylethoxymethyl derivatives of 1,3-dioxolo quinolines. 4,260,616, Cl. 424-258.000.
Hofbauer, Peter, to Volkswagenwerk Aktiengesellschaft. Device for starting a stationary unit. 4,259,930, Cl. 123-179.00J.
Hofer, Friedrich-Wilhelm: *See*—
Maucher, Edmund; Hofer, Friedrich-Wilhelm; and Schwerin, Gunther, 4,259,986, Cl. 137-596.120.
Hoffman, Jerzy, to Tritech Corporation. Electronic roulette game. 4,260,159, Cl. 273-138.00A.
Hoffman, Ronald W., to Weyerhaeuser Company. Container closure. 4,260,100, Cl. 229-39.00R.
Hoffman, Stephen A.: *See*—
Coughlin, William J.; Hoffman, Stephen A.; and Hummel, Jerry R., 4,260,867, Cl. 219-70.000.
Hoffmann-La Roche Inc.: *See*—
Berger, Leo; and Olson, Gary L., 4,260,762, Cl. 546-84.000.
Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, 4,260,772, Cl. 548-255.000.
Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, 4,260,773, Cl. 548-255.000.
Holland, George W.; and Rosen, Perry, 4,260,818, Cl. 562-503.000.
Hohlbaum, Theodor J. M., to RTL Contactor Holding S.A. Apparatus for contacting liquids. 4,260,586, Cl. 422-269.000.
Hokusho, Takayasu: *See*—
Ishii, Kenichi; and Hokusho, Takayasu, 4,260,989, Cl. 343-704.000.
Holland, George W.; and Rosen, Perry, to Hoffmann-La Roche Inc. 16-Substituted prostaglandins. 4,260,818, Cl. 562-503.000.
Holland, Robert E.; and Tabak, Samuel A., to Mobil Oil Corporation. Conversion of oxygenated products of Fischer-Tropsch synthesis. 4,260,841, Cl. 585-319.000.
Hollander, George. Article of furniture and modules for forming the same. 4,259,755, Cl. 5-58.000.
Holloway, Ian P.; and Lloyd, Raymond A., to H. R. Turner (Willenhall) Limited. Hinge fittings. 4,260,190, Cl. 297-361.000.
Holly, Sandor; and Erdelyi, Emery, to Rockwell International Corporation. Non-cryogenic infrared position and image sensor. 4,260,888, Cl. 250-330.000.
Holmes, John R.; and Jordan, Roy G., to MCA Disco-Vision, Inc. Method and means for replicating centrally apertured video disc records. 4,260,360, Cl. 425-548.000.
Holophane S.A.: *See*—
Mousset, Noel, 4,261,029, Cl. 362-283.000.
Holritz, Robert F.; and Stewart, Robert C., deceased (by Stewart, Dorothy M., executrix), to Westinghouse Electric Corp. Installation apparatus for escalators. 4,260,318, Cl. 414-589.000.
Holton, Robert J., to Eaton Corporation. Fastener. 4,259,767, Cl. 24-73.0SM.
Hombak Maschinenfabrik K.G.: *See*—
Schmalz, Karl H.; Schmidt, Arnold; and Ulrich, Karl H., 4,260,002, Cl. 144-230.000.
Honda, Yukio: *See*—
Aida, Toshiyuki; Taguchi, Sadanori; Yuito, Isamu; Kawabe, Ushio; Yamamoto, Shigehiko; Honda, Yukio; Shibata, Norio; and Okano, Hiroshi, 4,260,665, Cl. 428-633.000.
Honeywell Inc.: *See*—
Bartels, James I., 4,259,982, Cl. 137-392.000.
Bjorke, Merlin D., 4,260,912, Cl. 307-597.000.
Groenefeld, Heinz, 4,260,129, Cl. 251-77.000.
Janssen, John E., 4,259,987, Cl. 137-606.000.
Strauss, Willard R., 4,260,995, Cl. 346-32.000.
Honeywell Information Systems Inc.: *See*—
Lemay, Richard A.; Huettner, Robert E.; Grandmaison, John P.; and Vernon, John H., 4,261,033, Cl. 364-200.000.
Raymond, James C., 4,261,035, Cl. 364-200.000.
Honeywell Information Systems Italia: *See*—
Cavallari, Pier G., 4,260,270, Cl. 400-124.000.
Hongu, Masayuki; and Tokuhara, Masaharu, to Sony Corporation. Television receiver. 4,261,016, Cl. 358-195.100.
Honjo, Kazuo: *See*—
Ito, Masaharu; Kondo, Shiro; and Honjo, Kazuo, 4,260,492, Cl. 210-386.000.
Honma, Hiroshi, to Hochiki Corporation. Count discriminating fire detector. 4,260,984, Cl. 340-630.000.
Honma, Toshio; Furuichi, Katsushi; Murakami, Katsumi; and Tomosada, Masahiro, to Canon Kabushiki Kaisha. Copying apparatus. 4,260,241, Cl. 355-14.00R.
Hood, Andrew G., III. Cooling pad. 4,259,961, Cl. 128-400.000.
Hooker Chemicals & Plastics Corp.: *See*—
Dannels, W. Andrew; and Bainbridge, Robert W., 4,260,359, Cl. 425-543.000.
Hootman, Harry E.: *See*—
Warren, Jeffery H.; and Hootman, Harry E., 4,259,910, Cl. 110-211.000.
Hopner, Theodor: *See*—
Kruger, Horst; Berndt, Wilhelm; Schwartzkopff, Ursula; Reitter, Franz J.; Hopner, Theodor; and Muhlig, Hans-Joachim, 4,260,452, Cl. 162-23.000.
Hopper, Laurie P.: *See*—
Seid, Bobby P.; and Hopper, Laurie P., 4,259,886, Cl. 83-425.200.
Hopper, Meinolf: *See*—
Piret, Norbert L.; Hopper, Meinolf; and Kudelka, Herbert, 4,260,588, Cl. 423-37.000.
Horbal, Paul J.: *See*—
Kotski, Edward J.; and Horbal, Paul J., 4,260,213, Cl. 339-111.000.
Horgan, Stephen W.: *See*—
Carr, Albert A.; Cheng, Hsien C.; Horgan, Stephen W.; and Woodward, James K., 4,260,626, Cl. 424-273.00R.
Horie, Yoshihiro; Nagata, Kenzo; and Hatano, Manabu, to Minolta Camera Kabushiki Kaisha. Power feed control device for copying apparatus. 4,260,904, Cl. 307-113.000.
Horinouchi, Kazuo: *See*—
Yamada, Koichi; Nakazato, Kunio; Horinouchi, Kazuo; Hamano, Seiichi; and Mouri, Masahide, 4,260,524, Cl. 252-463.000.
Horiuchi, Toshiaki, to Mitsubishi Denki Kabushiki Kaisha. Circuit breaker. 4,260,865, Cl. 200-320.000.
Horn, John M.: *See*—
Sample, Thomas E., Jr.; and Horn, John M., 4,260,498, Cl. 252-28.000.
Horner, Michael; Nissen, Axel; Laurer, Peter R.; Irgang, Matthias; and Pasedach, Heinrich, to BASF Aktiengesellschaft. Preparation of carbonyl compounds. 4,260,829, Cl. 568-462.000.
Hornsby, J. Russell, Jr. Amusement device comprising inflatable doll and separable doll enclosure. 4,259,805, Cl. 46-44.000.
Horvath, Agnes: *See*—
Hermecz, Istvan; Meszaros, Zoltan; Breining, Tibor; Virag, Sandor; Vasvari nee Debreczi, Lelle; Horvath, Agnes; Nagy, Gabor; Mandi, Attila; Szuts, Tamas; Bitteer, Istvan; and Sebestyen, Gyula, 4,260,612, Cl. 424-251.000.
Horvath, Ralph S.; and Chapel, Annette M. Suture and needle holder. 4,260,056, Cl. 206-370.000.
Horyu, Sakae: *See*—
Ishiwatari, Masumi; Horyu, Sakae; and Seki, Mitsuaki, 4,261,042, Cl. 364-709.000.
Hosokawa, Masuo; Yokoyama, Tohei; Mizui, Katsuya; Yamashita, Haruhisa; and Doi, Kouichi, to Kabushiki Kaisha Hosokawa Funtai Kogaku Kenkyusho. Apparatus for classifying particles. 4,260,478, Cl. 209-139.00A.
Houle, Philip J.; and Oliver, Robert G., to Gloucester Engineering Co., Inc. Utilization of air jets for discharge conveyor on wicketing systems. 4,260,147, Cl. 271-182.000.
Houminer, Yoram; and Sanders, Edward B., to Philip Morris Incorporated. Smoking compositions. 4,259,969, Cl. 131-278.000.
Houston, John; and Rigby, Victor P., to Edbro Limited. Machines for positioning roof supports in a tunnel. 4,260,297, Cl. 405-303.000.
Howmedica Inc.: *See*—
McLeod, Francis; Silverstein, Spencer; and Kurtz, Robert J., 4,259,870, Cl. 73-861.250.
Hsu, Yun T. Bilateral swingable self-closing door hinge with common bolting axle. 4,259,763, Cl. 16-154.000.
Huang, Irene C.: *See*—
Schinski, William L.; Chan, David C. K.; and Huang, Irene C., 4,260,410, Cl. 71-76.000.
Huang, Tracy J.: *See*—
Chen, Nai Y.; Haag, Werner O.; and Huang, Tracy J., 4,260,839, Cl. 585-257.000.
Huang, Wann-Sheng: *See*—
Shum, Yick-Mow; and Huang, Wann-Sheng, 4,260,018, Cl. 166-272.000.
Huart, Robert, to DHV Raadgevend Ingenieursbureau BV. Filter tube for drain purposes. 4,260,284, Cl. 405-43.000.

Hubbard, Winchester L.: *See*—
Harrison, William A.; Hubbard, Winchester L.; and Grahame, Robert E., Jr., 4,260,765, Cl. 546-280.000.
Strunk, Richard J.; Hubbard, Winchester L.; and Grahame, Robert E., Jr., 4,260,552, Cl. 260-429.700.
Huber, Ludwig. Continuous flow water heater. 4,259,928, Cl. 122-24.000.
Huber, Ludwig. Resonant or pulsating combustion heating apparatus. 4,260,361, Cl. 431-1.000.
Huber, Rolf: *See*—
Baumann, Annegrit; Adolphi, Heinrich; Huber, Rolf; and Kiehs, Karl, 4,260,604, Cl. 424-200.000.
Huch, Albert. Multi-purpose transducer for transcutaneous blood measurements. 4,259,963, Cl. 128-635.000.
Hudgin, Donald E.; and Zawadzki, Thomas, to Princeton Polymer Laboratories. Process for preparing polyethylene waxes. 4,260,548, Cl. 260-346.740.
Huettner, Robert E.: *See*—
Lemay, Richard A.; Huettner, Robert E.; Grandmaison, John P.; and Vernon, John H., 4,261,033, Cl. 364-200.000.
Hughes Aircraft Company: *See*—
Braun, Leroy O., 4,260,254, Cl. 356-154.000.
Halushka, Roman A.; and McGowan, George A., 4,260,180, Cl. 285-9.00M.
Lewyn, Lanny L., 4,260,951, Cl. 328-165.000.
Hughes, Paul R.: *See*—
Kolodny, Gerald M.; and Hughes, Paul R., 4,260,854, Cl. 179-6.090.
Hujer, Friedrich, to Agfa-Gevaert Aktiengesellschaft. Apparatus for making test exposures on marginal portions of photographic films or the like. 4,260,245, Cl. 355-40.000.
Humbert, Manfred: *See*—
Maier, Gerhard; Rosenke, Udo; and Humbert, Manfred, 4,260,113, Cl. 241-28.000.
Hummel, Jerry R.: *See*—
Coughlin, William J.; Hoffman, Stephen A.; and Hummel, Jerry R., 4,260,867, Cl. 219-70.000.
Hunten, Siegfried: *See*—
Hagemann, Hans J.; and Hunten, Siegfried, 4,260,663, Cl. 428-472.000.
Hurst, Aubrey J. Method of making a foamed polystyrene building panel. 4,260,569, Cl. 264-45.400.
Hydra-Mac, Inc.: *See*—
Steiger, Bruce W., 4,260,320, Cl. 414-680.000.
Hydril Company: *See*—
Mott, James D., 4,260,021, Cl. 166-318.000.
Iacoviello, John G.; and Daniels, Wiley E., to Air Products and Chemicals, Inc. Vinyl acetate/allylic amine copolymer emulsions for paint having wet adhesion properties. 4,260,533, Cl. 260-29.6TA.
Ichikawa, Singo: *See*—
Motoki, Jinro; Ichikawa, Singo; Miyasaka, Kenzi; Uematsu, Hiroyuki; Murata, Mitsuhiro; Kawashima, Hideyuki; Inoue, Yuri; Ohkubo, Masae; and Ooka, Mituo, 4,261,048, Cl. 368-69.000.
Idemoto, Atsushi: *See*—
Maki, Yoshiki; Idemoto, Atsushi; and Oda, Norimasa, 4,260,264, Cl. 366-75.000.
Iezuka, Isamu: *See*—
Nakanishi, Kiyoshi; Ito, Kazuhiko; Okumura, Takeshi; Iezuka, Isamu; and Yasukawa, Masao, 4,259,933, Cl. 123-307.000.
IHC Holland N.V.: *See*—
Verboom, Pieter, 4,259,795, Cl. 37-66.000.
Iida, Yoshihiro; Shigeta, Haruhiko; and Akimoto, Hisao, to Yoshihiro Iida; and Showa Denko K.K. Method for determination of thermal properties by arbitrary heating. 4,259,859, Cl. 73-15.00A.
Ikeda Bussan Co., Ltd.: *See*—
Hayashi, Kazuo; and Takahashi, Fujio, 4,259,896, Cl. 98-2.030.
Ikeda, Yoshinari: *See*—
Umemura, Sumio; Matsui, Kanenobu; Ikeda, Yoshinari; Masunaga, Katsuro; Kadota, Takumi; Fujii, Kozo; Nishihira, Keigo; and Matsuda, Masaoki, 4,260,810, Cl. 560-204.000.
Ikegami, Toshimasa: *See*—
Ono, Tsuneyoshi; and Ikegami, Toshimasa, 4,261,046, Cl. 368-35.000.
Ikesue, Haruyuki, to NSK-Warner K.K. Seat belt retractor. 4,260,118, Cl. 242-107.40A.
Imayasu, Tomoyoshi: *See*—
Isono, Katsuo; and Imayasu, Tomoyoshi, 4,261,010, Cl. 358-67.000.
Imperial Chemical Industries Limited: *See*—
Anderton, Nicholas W. R.; Ford, Leslie J.; Kirk, Frank A.; and Oliver, Raymond, 4,260,734, Cl. 528-272.000.
Ford, Leslie J.; and Barker, Derrick P., 4,260,721, Cl. 528-272.000.
Hey, David G.; and Wheelhouse, Robert W., 4,260,510, Cl. 252-171.000.
Smith, Leslie H., 4,260,632, Cl. 424-285.000.
IMS Limited: *See*—
Ogle, Robert W., 4,259,956, Cl. 128-272.000.
Indesit Industria Elettrodomestici Italiana, S.p.A.: *See*—
Farina, Attilio, 4,261,055, Cl. 455-158.000.
Ingersoll-Rand Company: *See*—
Cantrel, James F., 4,260,294, Cl. 405-259.000.
Shaffer, Robert W.; and Morse, Henry W., 4,260,402, Cl. 55-505.000.
Ingerson, Quentin F.: *See*—
Edens, Walter W.; and Ingerson, Quentin F., 4,260,435, Cl. 148-32.500.
Inoue, Tokuta: *See*—
Watanabe, Noboru; Inoue, Tokuta; and Mitsuyasu, Masaki, 4,259,935, Cl. 123-478.000.
Inoue, Yuri: *See*—
Motoki, Jinro; Ichikawa, Singo; Miyasaka, Kenzi; Uematsu, Hiroyuki; Murata, Mitsuhiro; Kawashima, Hideyuki; Inoue, Yuri; Ohkubo, Masae; and Ooka, Mituo, 4,261,048, Cl. 368-69.000.
Institut de Cercetari si Proiectari pentru Utulaje de Constructii de Drumuri (I.C.PU.C.): *See*—
Arama, Stefanica; Daschievici, Stefan; Ferat, Cezar; and Turcescu, Feodor, 4,259,894, Cl. 91-487.000.
Intec Corporation: *See*—
Baker, Cole H., 4,260,899, Cl. 250-563.000.
Intercast Europe S.p.A.: *See*—
Baiocchi, Paolo; and Giani, Gian G., 4,260,564, Cl. 264-2.200.
Interesco International Research Corporation: *See*—
Scalet, Arno, 4,260,400, Cl. 55-290.000.
Interlock Industries Limited: *See*—
Davis, Ronald P., 4,259,811, Cl. 49-356.000.
International Business Machines: *See*—
Armitage, John D., Jr.; and Routt, Wilson M., Jr., 4,260,249, Cl. 355-67.000.
International Business Machines Corporation: *See*—
Arendt, Klaus; Hasler, Werner; and Schaller, Karl-Heinz, 4,259,903, Cl. 101-93.030.
Babuka, Robert; Emmons, William D.; Weiss, Robert L.; and Yacko, Peter, 4,260,210, Cl. 339-91.00R.
Baker, Gregory N.; Bateson, John E.; Brown, Earl T.; Delgado, Hortensia E.; Siegl, Ludwig R.; and Thomas, Delbert C., Jr., 4,261,039, Cl. 364-519.000.
Baumann, Gerald W., 4,260,073, Cl. 222-1.000.
Collins, Thomas W.; and Mehta, Kay B., 4,261,045, Cl. 365-26.000.
Galatha, Matthew J.; Rohrer, Gene D.; and Squires, John J., 4,260,879, Cl. 235-449.000.
Kirk, Joseph P., 4,260,259, Cl. 356-357.000.
Magdo, Ingrid E.; and Magdo, Steven, 4,261,003, Cl. 357-49.000.
Schmeckenbecher, Arnold F., 4,260,451, Cl. 156-664.000.
Smith, Robert C., 4,260,979, Cl. 340-146.30H.
Stack, James B., 4,260,235, Cl. 355-3.0CH.
Wittwer, Alvin L., 4,260,996, Cl. 346-75.000.
International Flavors & Fragrances Inc.: *See*—
Mookherjee, Braja D.; Wilson, Richard A.; Schmitt, Frederick L.; and Vock, Manfred H., 4,260,512, Cl. 252-174.110.
Sprecker, Mark A.; Vock, Manfred H.; Schmitt, Frederick L.; Vinals, Joaquin; and Kiwala, Jacob, 4,260,511, Cl. 252-174.110.
Trenkle, Robert W.; Mookherjee, Braja D.; Hall, John B.; Kasper, Robin; Vock, Manfred H.; Schreck, Ronald; Granda, Edward J.; and Vinals, Joaquin F., 4,260,527, Cl. 252-522.00R.
Wilson, Richard A.; Mookherjee, Braja D.; Hall, John B.; and Stork, Gilbert, 4,260,830, Cl. 568-485.000.
Withycombe, Donald A.; Mookherjee, Braja D.; Vock, Manfred H.; and Vinals, Joaquin F., 4,260,641, Cl. 426-536.000.
International Harvester Company: *See*—
Cameron, Thomas M., 4,260,322, Cl. 414-727.000.
International Minerals & Chemical Corp.: *See*—
Wehrmeister, Herbert L., 4,260,634, Cl. 424-324.000.
International Nickel Company, Inc., The: *See*—
Fisher, Gordon L., 4,260,470, Cl. 204-286.000.
Young, Charles E.; and Dobson, Charles D., 4,260,364, Cl. 431-160.000.
International Paper Company: *See*—
Ford, Mack L.; and McFarland, William W., 4,260,442, Cl. 156-207.000.
International Standard Electric Corporation: *See*—
Baumruck, Manfred, 4,260,971, Cl. 335-128.000.
Nelle, Friedrich, 4,260,974, Cl. 335-213.000.
International Telephone and Telegraph Corporation: *See*—
Dorn, Michael M., 4,260,214, Cl. 339-111.000.
Feehan, John D., 4,260,014, Cl. 165-105.000.
Parker, Ernest G., 4,260,994, Cl. 343-854.000.
INTERx Research Corporation: *See*—
Stella, Valentino J.; and Sloan, Kenneth B., 4,260,769, Cl. 548-112.000.
Inventing S.A.: *See*—
Wallsten, Hans I., 4,259,921, Cl. 118-206.000.
Ipco Hospital Supply Corporation: *See*—
Weissman, Bernard, 4,260,383, Cl. 433-225.000.
Ipri, Alfred C.; and Flatley, Doris W., to RCA Corporation. Method of making radiation resistant MOS transistor. 4,259,779, Cl. 29-571.000.
Ireland, Irving R.: *See*—
Kretas, George A.; and Ireland, Irving R., 4,260,493, Cl. 210-714.000.
Irgang, Matthias: *See*—
Horner, Michael; Nissen, Axel; Laurer, Peter R.; Irgang, Matthias; and Pasedach, Heinrich, 4,260,829, Cl. 568-462.000.
Irmscher, Edward. Automatic fire extinguisher for chimneys having a float operated flag. 4,260,023, Cl. 169-57.000.
Iseler, Kenneth A.; and Shah, Mayur S., to Budd Company, The. Matured moldable thermosetting dual polyester resin system. 4,260,538, Cl. 260-40.00R.
Isham, Robert H.; and Petrizio, Cesare J., to RCA Corporation. Oscillator circuit. 4,260,960, Cl. 331-111.000.

Ishigaki, Yoshikatsu: *See*—
Harada, Masato; Ishigaki, Yoshikatsu; Yamada, Sadahiko; Suzuki, Atsushi; Masuda, Jun; Hamazaki, Tadamitsu; Yoshida, Toshiaki; and Fukuda, Kiyoto, 4,260,723, Cl. 526-115.000.

Ishii, Kenichi; and Hokusho, Takayasu, to Asahi Glass Compamy, Limited. Antenna system for window glass of automobile. 4,260,989, Cl. 343-704.000.

Ishiwatari, Masumi; Horyu, Sakae; and Seki, Mitsuaki, to Canon Kabushiki Kaisha. Key signal entering device for thin electronic apparatus. 4,261,042, Cl. 364-709.000.

Ishizuka, Yoshitada: *See*—
Niihama, Koichi; and Ishizuka, Yoshitada, 4,260,860, Cl. 200-6.00R.

Ismert, Joseph P. Tubing hanger. 4,260,123, Cl. 248-74.00R.

Isobe, Mitsuhide: *See*—
Nagano, Masashi; and Isobe, Mitsuhide, 4,259,873, Cl. 474-82.000.

Isono, Katsuo; and Imayasu, Tomoyoshi, to Sony Corporation. Beam index color television receiver apparatus. 4,261,010, Cl. 358-67.000.

Ito, Kazuhiko: *See*—
Nakanishi, Kiyoshi; Ito, Kazuhiko; Okumura, Takeshi; Iezuka, Isamu; and Yasukawa, Masao, 4,259,933, Cl. 123-307.000.

Ito, Masaharu; Kondo, Shiro; and Honjo, Kazuo, to Shinko-Pfaudler Company Ltd. Rotary diaphragm press. 4,260,492, Cl. 210-386.000.

Ito, Reijiro, to Kokusai Display Kogyo Co., Ltd. Display device. 4,259,801, Cl. 40-449.000.

Itoh, Kazuo; Ogiue, Katsumi; and Hayasaka, Akio, to Hitachi, Ltd. Method of manufacturing a semiconductor device. 4,260,430, Cl. 148-1.500.

Iwasaka, Kunio: *See*—
Kakuta, Toshihiro; and Iwasaka, Kunio, 4,260,033, Cl. 177-34.000.

Iwata, Takashi: *See*—
Nakamura, Kiichi; and Iwata, Takashi, 4,260,965, Cl. 333-81.00A.

J. H. J. Company, Ltd.: *See*—
French, Harry C.; Lapinski, John R.; and MacCready, John J., 4,260,091, Cl. 224-311.000.

J. I. Case Company: *See*—
Flippin, James S., 4,260,290, Cl. 405-181.000.

J. M. Huber Corporation: *See*—
Wason, Satish K.; and Mays, Robert K., 4,260,454, Cl. 162-181.00C.

J. Ray McDermott & Co., Inc.: *See*—
Young, Charles E.; and Will, Stephen A., 4,260,291, Cl. 405-205.000.

Jackson, Clarence L. Hydrostatic spraying system. 4,260,107, Cl. 239-74.000.

Jackson, G. C., Jr., to Dresser Industries, Inc. Solids diverter for a downhole drilling motor. 4,260,031, Cl. 175-107.000.

Jacobe, Walter W.; and Bien, Gary K., to Eastman Kodak Company. Method for forming magnetic recording regions on photographic elements. 4,260,648, Cl. 427-45.100.

Jacobi, Helmuth O., to Dresser Industries, Inc. Method for machining an impeller cover. 4,260,304, Cl. 409-132.000.

Jacobs, Cornelis A. J.; and Brugmans, Marinus F., to U.S. Philips Corporation. High-pressure sodium vapor discharge lamp. 4,260,929, Cl. 313-184.000.

Jacobs, Cornelis A. J.: *See*—
Kuus, Gijsbert; de Vaan, Robertus L. C.; Jacobs, Cornelis A. J.; and Smulders, Herman A. G. S., 4,260,934, Cl. 315-326.000.

Jacobs, Peter; Mangold, Dietrich; and Hamprecht, Gerhard, to BASF Aktiengesellschaft. Preparation of amidosulfonic acids. 4,260,559, Cl. 260-513.600.

Jacobs, Peter; Hamprecht, Gerhard; and Mangold, Dietrich, to BASF Aktiengesellschaft. Preparation of sulfamyl halides. 4,260,560, Cl. 260-543.00R.

Jacobs, Richard W., to Bemis Company, Inc. Bag with opening and reclosing feature. 4,260,061, Cl. 206-626.000.

Jacobson, Walter E.; Kronish, Donald P.; Taylor, Doris B.; and Young, William D., to Warner-Lambert Company. Diagnostic device. 4,260,687, Cl. 435-301.000.

Jacobsson, Kurt A. G., to Aktiebolaget IRO. Positive thread-delivery device for textile machines. 4,259,851, Cl. 66-132.00T.

Jacobsson, Kurt A. G., to Aktiebolaget IRO. Positive thread-delivery device for stripe knitting machines. 4,259,852, Cl. 66-132.00T.

Jacquinot, Bernard: *See*—
Lhonore, Pierre; Quibel, Jacques; and Jacquinot, Bernard, 4,260,838, Cl. 568-947.000.

Jaggard, James F. R.: *See*—
Staiger, Gerhard; Jaggard, James F. R.; and Schneider, Paul, 4,260,710, Cl. 526-142.000.

Janome Sewing Machine Co. Ltd.: *See*—
Takenoya, Hideaki; and Makabe, Hachiro, 4,259,913, Cl. 112-158.00E.

Jansen, Harry: *See*—
Stiefel, Christian; and Jansen, Harry, 4,260,142, Cl. 267-9.00A.

Janssen, John E., to Honeywell Inc. Linear damper system. 4,259,987, Cl. 137-606.000.

Japan Steel Works Ltd., The: *See*—
Maki, Yoshiki; Idemoto, Atsushi; and Oda, Norimasa, 4,260,264, Cl. 366-75.000.

Japan Styrene Paper Corporation: *See*—
Akiyama, Hiroyuki; Shimoyashiki, Nobuyoshi; Hatakeyama, Hideo; and Yamamoto, Toru, 4,260,572, Cl. 264-53.000.

Jarret, Jacques: *See*—
Jarret, Jean; and Jarret, Jacques, 4,260,926, Cl. 310-254.000.

Jarret, Jean; and Jarret, Jacques, to Societe Elpalux. Variable reluctance electric motor with progressively saturable poles. 4,260,926, Cl. 310-254.000.

Jefferson, John A. Motorcycle ice chest. 4,260,085, Cl. 224-32.00R.

Jehan, Henry I., Jr.: *See*—
Hill, Garnett L.; Molnar, Antal T.; and Jehan, Henry I., Jr., 4,260,384, Cl. 434-16.000.

Jeney, Andreas: *See*—
Lapis, Karoly; Szende, Bela; Jeney, Andreas; Kopper, Laszlo; Simon, Karoly; Tyihak, Erno; Kisfaludy, Lajos; Kovacs, Lajos; and Dobo, Gyorgy, 4,260,595, Cl. 424-10.000.

Jenkins, Andrew H.: *See*—
Wachs, John J.; and Jenkins, Andrew H., 4,260,255, Cl. 356-222.000.

Jenkins, Herndon: *See*—
Cale, Albert D., Jr.; and Jenkins, Herndon, 4,260,606, Cl. 424-244.000.

Jensen, Aksel S.: *See*—
Anderson, Raymond B., Jr.; and Jensen, Aksel S., 4,260,346, Cl. 425-78.000.

Jensen, Finn: *See*—
Karlsen, Kurt B., 4,260,152, Cl. 273-85.00D.

Jerke, Marlyn L.; Stokes, William E.; and Wolf, David L., to Deere & Company. Harvester header with transversely inclined, overlapping conveyors. 4,259,831, Cl. 56-98.000.

Jersey Nuclear-Avco Isotopes, Inc.: *See*—
Congleton, Robert S.; and Treacy, Edmond B., 4,260,957, Cl. 331-94.50N.

Joba, Lawrence R.: *See*—
Munnerlyn, Charles R.; Joba, Lawrence R.; and Shanker, Ramakrishna, 4,260,227, Cl. 351-24.000.

Joest, Herbert: *See*—
Erpenbach, Heinz; Gehrmann, Klaus; and Joest, Herbert, 4,260,520, Cl. 252-437.000.

Johansson, Bengt A.; Nyvall, Ake K.; and Jonsson, Frank G., to Centro-Maskin Goteborg AB. Method of forming and collecting slag products formed at a melting process, especially at gas planing. 4,260,433, Cl. 148-9.500.

Johansson, Ingvar: *See*—
Rudolphi, Kjell; and Johansson, Ingvar, 4,259,846, Cl. 62-48.000.

Johansson, Sven H., to Aktiebolaget Svenska Electromagneter. Apparatus in electronic ignition systems. 4,259,938, Cl. 123-599.000.

Johns, Allan T.; and Martin, Michael A., to National Research Development Corporation. Protection of electrical power supply systems. 4,261,038, Cl. 364-482.000.

Johns Hopkins University, The: *See*—
Loveless, John H.; and Seamone, Woodrow, 4,260,035, Cl. 180-6.500.

Johnson, Bruce V., to United Technologies Corporation. Coolant flow control apparatus for rotating heat exchangers with supercritical fluids. 4,260,336, Cl. 416-96.00R.

Johnson Controls, Inc.: *See*—
Matthews, Russell B., 4,260,362, Cl. 431-69.000.

Johnson & Johnson Baby Products Company: *See*—
Armstrong, David P.; Lukenbach, Elvin R.; and Verdicchio, Robert J., 4,260,550, Cl. 260-410.000.

Johnson, Matthey & Co., Limited: *See*—
Thompson, David T.; Bird, Alfred J.; and Pearson, Edward J., 4,260,817, Cl. 562-487.000.

Johnson, Michael R., to Pfizer Inc. 9-Hydroxyoctahydrobenzo [C] quinolines and intermediates therefor. 4,260,764, Cl. 546-153.000.

Johnson, Ralph E., to Singer Company, The. Bobbin winding mechanism for a sewing machine. 4,259,914, Cl. 112-184.000.

Johnson, Vance. Method and circuit for facilitating the starting and steady state flickerless operation of a discharge lamp. 4,260,932, Cl. 315-205.000.

Jonas, Rochus; Schliep, Hans-Jochen; and Schorscher, Ernst, to Merck Patent Gesellschaft mit beschrankter Haftung. 2-Guanidinomethylindolines. 4,260,628, Cl. 424-274.000.

Jones, Brian C., to Combustion Engineering, Inc. Fluidized bed boiler feed system. 4,259,911, Cl. 110-245.000.

Jones, Charles W., to United States of America, Energy. Reciprocating pellet press. 4,260,349, Cl. 425-150.000.

Jones, Elby W.; and Phillips, Lawrence R. Golf game equipment. 4,260,157, Cl. 273-177.00R.

Jonsson, Frank G.: *See*—
Johansson, Bengt A.; Nyvall, Ake K.; and Jonsson, Frank G., 4,260,433, Cl. 148-9.500.

Jordan, Anthony. Marble runway game apparatus. 4,260,155, Cl. 273-120.00R.

Jordan, Roy G.: *See*—
Holmes, John R.; and Jordan, Roy G., 4,260,360, Cl. 425-548.000.

Joy Manufacturing Company: *See*—
Morrison, Ward D.; and Lumbra, Ralph C., 4,260,029, Cl. 173-1.000.

Joyce, Samuel F., III; Morgan, Albert W.; Touchette, Norman W.; and Vanderlinde, William, to Monsanto Company. Reaction products of metal oxides and salts with phosphorus compounds. 4,260,542, Cl. 260-45.75R.

Joyes, John F., to Lucas Industries Limited. Control circuits for electrically driven vehicles. 4,260,938, Cl. 318-434.000.

Juergens, David A., to Rubbermaid Commercial Products Inc. Ingredient bin cover. 4,260,069, Cl. 220-331.000.

Jujo Paper Co. Ltd.: *See*—
Yamaguchi, Akihiro; Kobayashi, Tadashi; Yamaguchi, Keizaburo; Osawa, Kisuke; Murakami, Hisamichi; Yamato, Noboru; and Hasegawa, Akira, 4,260,179, Cl. 282-27.500.

Jung, Michel: *See*—
Casara, Patrick J.; Jung, Michel; and Metcalf, Brian W., 4,260,823, Cl. 562-571.000.

Junge, Bodo; Krause, Hans P.; Muller, Lutz; and Puls, Walter, to Bayer Aktiengesellschaft. Animal feedstuffs employing 3,4,5-trihydroxypiperidines. 4,260,622, Cl. 424-267.000.

Kabel-und Metallwerke, Gutehoffnungshutte A.G.: *See*— Rohner, Peter, 4,259,990, Cl. 138-113.000.

Kabushiki Kaisha Daini Seikosha: *See*— Nakao, Hideyuki, 4,261,047, Cl. 368-38.000.

Kabushiki Kaisha Hosokawa Funtai Kogaku Kenkyusho: *See*— Hosokawa, Masuo; Yokoyama, Tohei; Mizui, Katsuya; Yamashita, Haruhisa; and Doi, Kouichi, 4,260,478, Cl. 209-139.00A.

Kabushiki Kaisha Suwa Seikosha: *See*— Kawasumi, Kazuo, 4,260,915, Cl. 310-49.00R. Ono, Tsuneyoshi; and Ikegami, Toshimasa, 4,261,046, Cl. 368-35.000. Takayama, Masaji, 4,260,224, Cl. 350-335.000.

Kabushiki Kaisha Universal: *See*— Momura, Toshihiro J., 4,260,156, Cl. 273-127.00R.

Kadota, Takumi: *See*— Umemura, Sumio; Matsui, Kanenobu; Ikeda, Yoshinari; Masunaga, Katsuro; Kadota, Takumi; Fujii, Kozo; Nishihira, Keigo; and Matsuda, Masaoki, 4,260,810, Cl. 560-204.000.

Kaeser, James A.: *See*— Sonenstein, Gerard G.; and Kaeser, James A., 4,259,957, Cl. 128-287.000.

Kaiser, Karl; Willms, Robert; and Kuxdorf, Bernhard, to Hoechst Aktiengesellschaft. Process and apparatus for the continuous removal of residual hydrocarbons from polyolefins. 4,260,847, Cl. 585-833.000.

Kaiser, Roman; and Naegeli, Peter, to Givaudan Corporation. Perfume compositions containing 2,6,10,10-tetra-methyl-1-oxa-spiro[4,5]-decan-7-one. 4,260,526, Cl. 252-522.00R.

Kakeya, Nobuharu; and Yoshimura, Yoshinobu, to Takeda Chemical Industries, Ltd. Cephalosporin esters. 4,260,607, Cl. 424-246.000.

Kakuta, Toshihiro; and Iwasaka, Kunio, to Yamato Scale Company Limited. Body weighing machine. 4,260,033, Cl. 177-34.000.

Kaltec Scientific Instrument, Inc.: *See*— Sheaks, Lloyd D.; and Drew, W. Howard, 4,259,862, Cl. 73-73.000.

Kaltenbach & Voight GmbH & Co.: *See*— Eibofner, Eugen; and Strohmaier, Ernst, 4,260,381, Cl. 433-126.000.

Kalthoff, Charles W. Sanitary hood edge. 4,259,944, Cl. 126-299.00D.

Kamaishi, Tadami: *See*— Abiko, Shigeo; and Kamaishi, Tadami, 4,259,905, Cl. 101-467.000.

Kametaka, Norio; Marumo, Kuniomi; Tokuda, Kiyonori; and Sekiguchi, Kazuo, to Showa Denko K.K. Process for the continuous production of ethylene glycol monoethyl ether acetate. 4,260,813, Cl. 560-234.000.

Kamio, Kunimasa: *See*— Matsushima, Shunsuke; Hata, Kazuhiko; Mashita, Kentaro; Kanagawa, Shuichi; Nakao, Shinji; Nakai, Kiyoshi; and Kamio, Kunimasa, 4,260,831, Cl. 568-719.000.

Kammerer, Leo P.: *See*— McCollum, James H., Jr.; and Kammerer, Leo P., 4,259,838, Cl. 60-224.000.

Kamoshita, Katsuzo: *See*— Yoshida, Ryo; Takemoto, Ichiki; Sumida, Seizo; and Kamoshita, Katsuzo, 4,260,411, Cl. 71-88.000.

Kamyr Valves, Inc.: *See*— Kindersley, Peter G., 4,260,131, Cl. 251-214.000.

Kanagawa, Shuichi: *See*— Matsushima, Shunsuke; Hata, Kazuhiko; Mashita, Kentaro; Kanagawa, Shuichi; Nakao, Shinji; Nakai, Kiyoshi; and Kamio, Kunimasa, 4,260,831, Cl. 568-719.000.

Kanamaru, Tsuneo: *See*— Okazaki, Hisayoshi; Kanamaru, Tsuneo; and Ohta, Kazuhiko, 4,260,599, Cl. 424-122.000.

Kaneko, Kazuo: *See*— Mizoguchi, Naoji; Takama, Eiichi; and Kaneko, Kazuo, 4,260,424, Cl. 106-309.000.

Kanemori, Takaaki: *See*— Fujiwara, Tatsuo; Watanabe, Masayasu; Yabumoyo, Mikio; Kanemori, Takaaki; and Seo, Hiroshi, 4,260,356, Cl. 425-311.000.

Kao, Jar-lin; and Sheng, Ming N., to Atlantic Richfield Company. Preparation of esters by the thermal decomposition of a bis(2-bromoalkyl)tellurium dicarboxylate compound. 4,260,814, Cl. 560-266.000.

Karl Mengele & Sohne: *See*— Lenzer, Xaver, 4,259,830, Cl. 56-10.800.

Karlsen, Kurt B., to Jensen, Finn. Game. 4,260,152, Cl. 273-85.00D.

Karlsson, Einar L. Process and a device for treatment of biologic fuels. 4,260,368, Cl. 432-1.000.

Karlyk, Raymond. Selectively actuatable candle igniter. 4,260,366, Cl. 431-298.000.

Karsay, Bela I.; Sturtevant, Robert L.; and Gancy, Alan B., to Allied Chemical Corporation. Continuous cyclic process for alkylation of hydrocarbons. 4,260,846, Cl. 585-730.000.

Kasper, Robin: *See*— Trenkle, Robert W.; Mookherjee, Braja D.; Hall, John B.; Kasper, Robin; Vock, Manfred H.; Schreck, Ronald; Granda, Edward J.; and Vinals, Joaquin F., 4,260,527, Cl. 252-522.00R.

Kasuga, Muneo: *See*— Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, 4,260,236, Cl. 355-3.0TR.

Katayama, Kenji: *See*— Yasumatsu, Mutsuo; Katayama, Kenji; and Sakamoto, Koichi, 4,260,636, Cl. 426-34.000.

Kato, Takeshi: *See*— Kawamura, Michio; Kato, Takeshi; Ohira, Kouji; Nishimura, Katsusuke; and Mitsui, Kazuaki, 4,260,878, Cl. 235-92.0AC.

Kato, Toshiaki: *See*— Fukuda, Kotaro; Okamoto, Yosinori; Shimada, Masakatsu; Kato, Toshiaki; Tabuchi, Katsuhiko; Shimura, Makoto; and Fujiwara, Takashi, 4,259,965, Cl. 128-640.000.

Katunuma, Tatuo: *See*— Mabuchi, Kenichi; and Katunuma, Tatuo, 4,259,809, Cl. 46-249.000.

Katz, Ami. Solar heaters. 4,259,942, Cl. 126-442.000.

Katzen, Stanley J.: *See*— Rekers, Louis J.; Katzen, Stanley J.; and Krekeler, Jerome H., 4,260,706, Cl. 526-100.000.

Katzer, James R.; and Windawi, Hassan, to University of Delaware. Process for the regeneration of metallic catalysts. 4,260,518, Cl. 252-411.00S.

Kaufman, Phillip A.: *See*— Saccomano, Michael L.; Washburn, Jerry R.; Goodrich, Donald W.; Wagner, Victor A.; and Kaufman, Phillip A., 4,261,034, Cl. 364-200.000.

Kausch, Marvin L., to Cromemco Inc. Isolation chamber for electronic devices. 4,259,843, Cl. 62-3.000.

Kavesh, Sheldon; and Henschel, Claude, to Allied Chemical Corporation. Amorphous metal alloy for structural reinforcement. 4,260,416, Cl. 75-125.000.

Kawabe, Ushio: *See*— Aida, Toshiyuki; Taguchi, Sadanori; Yuito, Isamu; Kawabe, Ushio; Yamamoto, Shigehiko; Honda, Yukio; Shibata, Norio; and Okano, Hiroshi, 4,260,665, Cl. 428-633.000.

Kawaguchi, Hiroshi; Konishi, Masataka; Tsuno, Takashi; and Miyaki, Takeo, to Bristol-Myers Company. Process for producing antibacterial agents. 4,260,683, Cl. 435-74.000.

Kawaguchi, Takeyuki: *See*— Taketani, Yutaka; Hayashi, Yuzuru; Kawaguchi, Takeyuki; Ono, Tomoyoshi; and Mori, Ko, 4,260,652, Cl. 427-245.000.

Kawamura, Michio; Kato, Takeshi; Ohira, Kouji; Nishimura, Katsusuke; and Mitsui, Kazuaki, to Nippondenso Co., Ltd.; Systemkiki Co., Ltd.; and Fuji Xerox Co., Ltd. Management system for copying machines. 4,260,878, Cl. 235-92.0AC.

Kawarada, Osamu, to Olympus Optical Co., Ltd. Electronic flash device. 4,260,231, Cl. 354-128.000.

Kawasaki, Takuya, to Nikku Industry Co., Ltd. Method of removing tar mist and apparatus therefor. 4,260,399, Cl. 55-74.000.

Kawashima, Hideyuki: *See*— Motoki, Jinro; Ichikawa, Singo; Miyasaka, Kenzi; Uematsu, Hiroyuki; Murata, Mitsuhiro; Kawashima, Hideyuki; Inoue, Yuri; Ohkubo, Masae; and Oooka, Mituo, 4,261,048, Cl. 368-69.000.

Kawasumi, Kazuo, to Kabushiki Kaisha Suwa Seikosha. Permanent magnet step motor with a shiftable rotor. 4,260,915, Cl. 310-49.00R.

Kayne, Marvin L., to Valley Candle Mfg. Co., Inc. Candle lamp. 4,260,365, Cl. 431-291.000.

Kazan, John; and Yu, Chen S., to American Cyanamid Company. Process for preparing a solution of DL-mandelic acid. 4,260,815, Cl. 562-401.000.

Keeler Corporation: *See*— Owen, Kenneth R., 4,259,758, Cl. 10-10.00R.

Keiper Automobiltechnik GmbH & Co. KG: *See*— Kluting, Bernd, 4,260,178, Cl. 280-804.000.

Keller, Alois, to Gebrueder Buehler AG. Sifting device. 4,260,481, Cl. 209-315.000.

Keller, Morris C.: *See*— Thompson, Earl C.; Keller, Morris C.; and Rustin, Francis, 4,260,133, Cl. 251-339.000.

Keller, Wolfgang, to Bayer Aktiengesellschaft. Rotary tube. 4,260,372, Cl. 432-103.000.

Kelley Contract Dewatering Company: *See*— Kelley, Lawrence G.; Nelson, Wayne E.; and Quist, Clark J., 4,260,334, Cl. 417-52.000.

Kelley, Lawrence G.; Nelson, Wayne E.; and Quist, Clark J., to Kelley Contract Dewatering Company. Ground dewatering system. 4,260,334, Cl. 417-52.000.

Kemperman, Theo: *See*— Schmidt, Manfred; Kemperman, Theo; Freitag, Dieter; Fries, Hermann; and Esch, Erich, 4,260,704, Cl. 525-501.000.

Kempter, Fritz E.; Hartmann, Heinrich; and Gulbins, Erich, to BASF Aktiengesellschaft. Surface-coating binders. 4,260,697, Cl. 525-484.000.

Kendall Company, The: *See*— Taylor, Glenn N., 4,259,960, Cl. 128-349.00B.

Keogh, Philip L.; Kunzler, Jay F.; and Niu, Gregory C. C., to Bausch & Lomb Incorporated. Hydrophilic contact lens made from polysiloxanes which are thermally bonded to polymerizable groups and which contain hydrophilic sidechains. 4,260,725, Cl. 526-279.000.

Kephart, Ryan K. Bottle attachment having outlet and vent. 4,260,078, Cl. 222-184.000.

Kerb, Ulrich; Stahnke, Manfred; and Wiechert, Rudolf, to Schering Aktiengesellschaft. Process for the preparation of 17α-(3-iodobenzoyloxy)-9α-chloro-4-pregnene-3,20-diones and their D-homo homologs. 4,260,464, Cl. 204-158.0HA.

Kerg, Catherine A., to Union Carbide Corporation. Alkaline-MnO_2 cell having a zinc powder-gel anode containing starch graft copolymer. 4,260,669, Cl. 429-215.000.

Kerhoas, Jean-Claude; and Cattan, Gilles, to Societe de Fabrication d'Instruments de Mesure S.F.I.M. Gyroscopes. 4,259,871, Cl. 74-5.460.

Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
Scholz, Franz, 4,259,993, Cl. 138-149.000.
Kernsforschungsanlage Julich GmbH: *See—*
Barnert, Eike; Frommelt, Wolfgang; and Zimmer, Erich, 4,259,925, Cl. 118-716.000.
Kerr, F. Michael; and Westland, Alan D., to Canadian Patents and Development Limited. Latent fingerprint detection. 4,260,645, Cl. 427-1.000.
Kessel, Bernhard. Cleanout fitting with lockable and removable check valve. 4,259,983, Cl. 137-512.000.
Kessler, Alan B.: *See—*
Bory, Barbara H.; and Kessler, Alan B., 4,260,054, Cl. 206-0.500.
Kessmar, Leo R., to Dana Corporation. Transmission shift control. 4,259,877, Cl. 74-473.00R.
Key Tronic Corporation: *See—*
Thomas, Robert J., 4,260,880, Cl. 235-454.000.
Khuditskaya, Galina S.: *See—*
Knyazeva, Vera I.; Vasiliev, Nikolai V.; Khuditskaya, Galina S.; Ponomarev, Alexandr I.; Ponomarev, Vasily I.; and Belyansky, Oleg M., 4,259,854, Cl. 69-21.000.
Kicherer, Robert; and Schwarze, Manfred. Thermostatic switch. 4,260,977, Cl. 337-318.000.
Kidd, Leonard A. Guide for imprinting bottle tops. 4,259,901, Cl. 101-42.000.
Kieffer, Vincent C. Sawhorse extension tables. 4,260,040, Cl. 182-181.000.
Kiehs, Karl: *See—*
Baumann, Annegrit; Adolphi, Heinrich; Huber, Rolf; and Kiehs, Karl, 4,260,604, Cl. 424-200.000.
Kimmet, Daniel E.: *See—*
Greenawalt, Thomas H.; and Kimmet, Daniel E., 4,260,184, Cl. 285-305.000.
Kindersley, Peter G., to Kamyr Valves, Inc. Low and high operating temperatures valve. 4,260,131, Cl. 251-214.000.
King, Donald L.; and Glanville, Gerald S., to Envirotech Corporation. Rotary rake structure for a settling tank. 4,259,777, Cl. 29-526.00R.
Kinsey, Ennis W., Jr.; Gonzalez, Carlos; and Cox, James T., to Conoco, Inc. Stock tank gauger-level controller. 4,259,975, Cl. 137-1.000.
Kirby, Robert E., to Telex Computer Products, Inc. Low cost grounding hanger assembly. 4,260,849, Cl. 174-51.000.
Kirch, Lawrence S.: *See—*
Krieger, Harold; and Kirch, Lawrence S., 4,260,822, Cl. 562-549.000.
Kirk, Frank A.: *See—*
Anderton, Nicholas W. R.; Ford, Leslie J.; Kirk, Frank A.; and Oliver, Raymond, 4,260,734, Cl. 528-272.000.
Kirk, Joseph P., to International Business Machines Corporation. Metal etch rate analyzer. 4,260,259, Cl. 356-357.000.
Kirschmann, John D. Vented water distiller. 4,260,459, Cl. 202-200.000.
Kisfaludy, Lajos: *See—*
Lapis, Karoly; Szende, Bela; Jeney, Andreas; Kopper, Laszlo; Simon, Karoly; Tyihak, Erno; Kisfaludy, Lajos; Kovacs, Lajos; and Dobo, Gyorgy, 4,260,595, Cl. 424-10.000.
Kita, Shin: *See—*
Onoda, Seiichi; Yamada, Shoji; Minai, Yasuo; Maeda, Minoru; Kita, Shin; and Tanaka, Mitsuo, 4,260,883, Cl. 250-226.000.
Kita, Takeichi; and Kita, Takuji. Heat-insulating, antisweat structural component for prefabricated residential houses. 4,259,820, Cl. 52-303.000.
Kita, Takuji: *See—*
Kita, Takeichi; and Kita, Takuji, 4,259,820, Cl. 52-303.000.
Kitagawa, Tsuneo: *See—*
Murata, Tomoji; Shibazaki, Kenji; Arai, Kenichi; and Kitagawa, Tsuneo, 4,260,248, Cl. 355-60.000.
Kitamoto, Tatsuji: *See—*
Shirahata, Ryuji; Kitamoto, Tatsuji; Yamada, Yasuyuki; and Akashi, Goro, 4,260,466, Cl. 204-192.00M.
Kiwala, Jacob: *See—*
Sprecker, Mark A.; Vock, Manfred H.; Schmitt, Frederick L.; Vinals, Joaquin; and Kiwala, Jacob, 4,260,511, Cl. 252-174.110.
Klahre, Horst: *See—*
Rohrig, Lothar; Bucher, Gottfried; and Klahre, Horst, 4,260,355, Cl. 425-258.000.
Klatt, Erwin: *See—*
Troebel, Werner; and Klatt, Erwin, 4,260,969, Cl. 335-38.000.
Kliger, Howard S., to Celanese Corporation. Carbon fiber reinforced composite coil spring. 4,260,143, Cl. 267-148.000.
Kline, Richard H.: *See—*
Parker, Dane K.; and Kline, Richard H., 4,260,832, Cl. 568-784.000.
Klinkmann, Kurt; and Wambach, Raimund, to Bayer Aktiengesellschaft. Process for the purification of aqueous solutions of low molecular weight polyhydroxyl compounds. 4,260,827, Cl. 568-414.000.
Klippel, Allen P., to Rescue Products, Inc. Extrication back brace. 4,259,950, Cl. 128-89.00R.
Klosterboer, Donald H.: *See—*
Winslow, John M.; and Klosterboer, Donald H., 4,260,677, Cl. 430-618.000.
Kluger, Edward W.; Su, Tien-Kuei; and Thompson, Teresa J., to Milliken Research Corporation. Process for preparing nitrogen-containing compounds from 2-pentenenitrile. 4,260,556, Cl. 260-465.50R.
Kluibenschedl, Heinrich: *See—*
Blindow, Friedrich-Karl; Decker, Jurgen; Kluibenschedl, Heinrich; Munding, German; Sowa, Armin; and Wagner, Harald, 4,260,194, Cl. 299-11.000.
Kluting, Bernd, to Keiper Automobiltechnik GmbH & Co. KG. Anchorage and buckles for safety belts arranged in vehicles. 4,260,178, Cl. 280-804.000.
Knauff, Robert J. Low cost electromechanical electronic simulation circuits. 4,260,939, Cl. 318-558.000.
Knifton, John F., to Texaco Development Corp. Method of preparing aliphatic carboxylic acids. 4,260,820, Cl. 562-517.000.
Knittel, Volker: *See—*
Thamm, Horst-Dieter; Knittel, Volker; Sommer, Werner; and Weckler, Gerhard, 4,260,422, Cl. 106-111.000.
Knop, Hans-Georg, to Dr. Ing. Rudolf Hell GmbH. Color separation production using color recognition circuit. 4,261,011, Cl. 358-75.000.
Knowlton, Kenneth C., to Bell Telephone Laboratories, Incorporated. Progressive image transmission. 4,261,018, Cl. 358-263.000.
Knutti, Helmut: *See—*
Traeger, Rolf; Marx, Dieter; and Knutti, Helmut, 4,260,217, Cl. 350-1.200.
Knyazeva, Vera I.; Vasiliev, Nikolai V.; Khuditskaya, Galina S.; Ponomarev, Alexandr I.; Ponomarev, Vasily I.; and Belyansky, Oleg M. Method of obtaining natural leather with hair for warm unlined shoes. 4,259,854, Cl. 69-21.000.
Kobayashi, Kengo; and Sawada, Yasunobu, to Fujitsu Fanuc Limited. Tool wear detecting system for a numerically controlled machine tool. 4,260,986, Cl. 340-680.000.
Kobayashi, Shinsaku: *See—*
Mishima, Hiroshi; Ogiso, Akira; and Kobayashi, Shinsaku, 4,260,551, Cl. 260-410.600.
Kobayashi, Tadashi: *See—*
Yamaguchi, Akihiro; Kobayashi, Tadashi; Yamaguchi, Keizaburo; Osawa, Kisuke; Murakami, Hisamichi; Yamato, Noboru; and Hasegawa, Akira, 4,260,179, Cl. 282-27.500.
Kobe, Inc.: *See—*
Erickson, John W., 4,260,658, Cl. 428-163.000.
Kobe Steel, Limited: *See—*
Sekino, Teruyoshi; and Ogasawara, Takaaki, 4,260,870, Cl. 219-124.330.
Kobrinsky, Aron E.: *See—*
Belyanin, Petr N.; Frolov, Konstantin V.; Kobrinsky, Aron E.; Korendyasev, Alfred I.; Rozin, Boris S.; Salamandra, Boris L.; Sokolovsky, Felix P.; Stolin, Jury V.; and Tyves, Leonid I., 4,259,876, Cl. 74-469.000.
Kobrinsky, Peter C. Method for measurement of the neurochemistry of the brain. 4,259,947, Cl. 128-1.00R.
Koenig & Bauer Aktiengesellschaft: *See—*
Trutschel, Hartwig H.; Schmitt, Gunter K.; and Sendelbach, Franz J., 4,260,144, Cl. 270-14.000.
Kohyama, Katsuhisa: *See—*
Mori, Hajime; Kohyama, Katsuhisa; Nakamura, Katsuhiko; and Sakata, Katsuyuki, 4,260,731, Cl. 528-173.000.
Kokusai Display Kogyo Co., Ltd.: *See—*
Ito, Reijiro, 4,259,801, Cl. 40-449.000.
Koleske, Joseph V.: *See—*
Hodakowski, Leonard E.; and Koleske, Joseph V., 4,260,703, Cl. 525-455.000.
Kolinsky, Miloslav; Macho, Vendelin; Porubsky, Juraj; Kuska, Vladislav; Manas, Jaroslav; Sykora, Stanislav; and Lukas, Rudolf, to Ceskoslovenska Akademie Ved. Method for producing internally plasticized poly(vinyl chloride). 4,260,541, Cl. 260-45.8NT.
Kolodny, Gerald M.; and Hughes, Paul R., to Sudbury Systems Incorporated. Rapid simultaneous multiple access information storage and retrieval system. 4,260,854, Cl. 179-6.090.
Komai, Takeshi; and Matsushima, Masaru, to Nippon Oil and Fats Co., Ltd. Process for producing a methyl methacrylate series polymer translucent or opaque plate. 4,260,692, Cl. 525-273.000.
Komiyama, Katsuhiko; and Hiruta, Toshio, to Citizen Watch Co., Ltd. Wristwatch with solar cells. 4,261,049, Cl. 368-88.000.
Kondo, Renichi: *See—*
Suzuki, Gyoichi; Ando, Ryo; Koyama, Tatsuo; Kubodera, Shoji; and Kondo, Renichi, 4,260,414, Cl. 75-60.000.
Kondo, Shiro: *See—*
Ito, Masaharu; Kondo, Shiro; and Honjo, Kazuo, 4,260,492, Cl. 210-386.000.
Kondur, Nicholas, Jr., to C. Itoh Electronics. Inked ribbon advancement mechanism. 4,260,271, Cl. 400-232.000.
Konishi, Masataka: *See—*
Kawaguchi, Hiroshi; Konishi, Masataka; Tsuno, Takashi; and Miyaki, Takeo, 4,260,683, Cl. 435-74.000.
Konz, Elmar: *See—*
Bartmann, Wilhelm; and Konz, Elmar, 4,260,611, Cl. 424-250.000.
Bartmann, Wilhelm; Konz, Elmar; and Kruse, Hansjorg, 4,260,763, Cl. 546-144.000.
Kopper, Laszlo: *See—*
Lapis, Karoly; Szende, Bela; Jeney, Andreas; Kopper, Laszlo; Simon, Karoly; Tyihak, Erno; Kisfaludy, Lajos; Kovacs, Lajos; and Dobo, Gyorgy, 4,260,595, Cl. 424-10.000.
Koppers Company, Inc.: *See—*
Harris, Edward, 4,259,760, Cl. 15-93.00A.
Korber, Helmut: *See—*
Binsack, Rudolf; Rempel, Dieter; Korber, Helmut; and Neuray, Dieter, 4,260,690, Cl. 525-64.000.
Korendyasev, Alfred I.: *See—*
Belyanin, Petr N.; Frolov, Konstantin V.; Kobrinsky, Aron E.; Korendyasev, Alfred I.; Rozin, Boris S.; Salamandra, Boris L.; Sokolovsky, Felix P.; Stolin, Jury V.; and Tyves, Leonid I., 4,259,876, Cl. 74-469.000.

Kornahrens, Herman, to Garsite Products, Inc. Liquid fifth wheel assembly including dual concentric piping structure. 4,260,173, Cl. 280-421.000.

Koshoffer, John M.; Ekstedt, Edward E.; and Stamm, Edward I., to General Electric Company. Combustor liner slot with cooled props. 4,259,842, Cl. 60-757.000.

Koss Corporation: *See—*
Thew, Donald G.; and Gehrig, Lane, 4,260,575, Cl. 264-154.000.

Kostka, Hana, to Siemens Aktiengesellschaft. Metal catalyst without carrier for the partial soot-free oxidation of liquid hydrocarbons with air. 4,260,521, Cl. 252-443.000.

Kotski, Edward J.; and Horbal, Paul J., to General Electric Company. Electric circuit interrupter having means for restricting flow or arc-generated gases therefrom. 4,260,213, Cl. 339-111.000.

Kovacs, Lajos: *See—*
Lapis, Karoly; Szende, Bela; Jeney, Andreas; Kopper, Laszlo; Simon, Karoly; Tyihak, Erno; Kisfaludy, Lajos; Kovacs, Lajos; and Dobo, Gyorgy, 4,260,595, Cl. 424-10.000.

Kovacs, Terrence; Mills, Allen P., Jr.; and Pfeiffer, Loren N., to Bell Telephone Laboratories, Incorporated. Geiger-Mueller radiation detector with means for detecting and indicating the existence of radiation overload. 4,260,892, Cl. 250-388.000.

Koyama, Tatsuo: *See—*
Suzuki, Gyoichi; Ando, Ryo; Koyama, Tatsuo; Kubodera, Shoji; and Kondo, Renichi, 4,260,414, Cl. 75-60.000.

Koychev, Todor Y.; Georgiev, Georgi M.; Lazov, Lyuben K.; and Valchev, Alexander Y., to DSO "Cherna Metalurgia". Apparatus for coating graphite electrodes. 4,259,919, Cl. 118-47.000.

Kozawa, Tokujiro, to Olympus Optical Co., Ltd. Multi-layer non-reflecting film. 4,260,222, Cl. 350-164.000.

Kozuka, Nobuhiko; and Nakazawa, Toru, to Mita Industrial Co., Ltd. Transfer type electrostatic copying apparatus. 4,260,238, Cl. 355-3.0TR.

Kraffert, Erich: *See—*
Hartmann, Karl; Bartels, Klaus; and Kraffert, Erich, 4,260,640, Cl. 426-516.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Finckh, Hermann, 4,259,836, Cl. 60-39.330.

Krainev, Vladislav P.: *See—*
Berenov, Alexandr D.; Krainev, Vladislav P.; Mansurov, Midkhat M.; and Silin, Evgeny L., 4,260,010, Cl. 164-445.000.

Kramer, Hendrikus, to Vredestein N. V. Flexible pipe section. 4,259,992, Cl. 138-138.000.

Kranz, Paul J.; and Scroggins, Lloyd A., to Asarco Incorporated. Side dam apparatus for use in twin-belt continuous casting machines. 4,260,008, Cl. 164-431.000.

Kraske, LeRoy E.: *See—*
Beauchamp, Lynn I.; and Kraske, LeRoy E., 4,260,321, Cl. 414-694.000.

Krauch, Robert E., Jr.; and Tranberg, Thomas W., deceased (by Tranberg, Harriet R., executrix), to United States of America, Army. Shape charge agent disposing process. 4,259,906, Cl. 102-56.0SC.

Krause, Hans P.: *See—*
Junge, Bodo; Krause, Hans P.; Muller, Lutz; and Puls, Walter, 4,260,622, Cl. 424-267.000.

Krauss-Maffei AG: *See—*
Feistkorn, Jochen; Pohlmann, Edgar; Rothmayer, Walter; Schwarzler, Peter; Steinmetz, Gunter; and Zander, Peter, 4,259,908, Cl. 104-281.000.

Krech, Roger I., to Minnesota Mining and Manufacturing Company. Single sheet color proofing system. 4,260,673, Cl. 430-143.000.

Krekeler, Jerome H.: *See—*
Rekers, Louis J.; Katzen, Stanley J.; and Krekeler, Jerome H., 4,260,706, Cl. 526-100.000.

Kresge, Richard E.: *See—*
Rooney, Gerald A.; Kresge, Richard E.; and Miller, Jerry H., 4,260,082, Cl. 222-340.000.

Kretas, George A.; and Ireland, Irving R., to Shipley Company, Inc. Solution waste treatment. 4,260,493, Cl. 210-714.000.

Kreuter, Walter: *See—*
Wernicke, Hans J.; Kreuter, Walter; and Schliebener, Claus, 4,260,474, Cl. 208-57.000.

Krieger, Harold; and Kirch, Lawrence S., to Rohm and Haas Company. Process for the production of unsaturated acids. 4,260,822, Cl. 562-549.000.

Kronish, Donald P.: *See—*
Jacobson, Walter E.; Kronish, Donald P.; Taylor, Doris B.; and Young, William D., 4,260,687, Cl. 435-301.000.

Krueger, William R.: *See—*
Cavil, David T.; and Krueger, William R., 4,260,937, Cl. 318-358.000.

Krug, Herbert A.; and Gluckin, Gerald, to Liberty Fabrics of NY, Inc. Fold-over lace band for intimate apparel garments. 4,259,749, Cl. 2-244.000.

Kruger, Horst; Berndt, Wilhelm; Schwartzkopff, Ursula; Reitter, Franz J.; Hopner, Theodor; and Muhlig, Hans-Joachim. Production of paper pulp from sugar mill bagasse. 4,260,452, Cl. 162-23.000.

Krupp, Carroll P., to B.F. Goodrich Company, The. Pump hose swivel connection. 4,260,183, Cl. 285-134.000.

Krupp Polysius AG: *See—*
Goldmann, Wolf; and Rother, Wolfgang, 4,260,370, Cl. 432-14.000.

Kruse, Hansjorg: *See—*
Bartmann, Wilhelm; Konz, Elmar; and Kruse, Hansjorg, 4,260,763, Cl. 546-144.000.

Kuban, William G., to Kurt Manufacturing Company, Inc. Blade sharpener. 4,259,815, Cl. 51-205.00R.

Kubo, Masaharu: *See—*
Masuhara, Toshiaki; Minato, Osamu; Sakai, Yoshio; Sasaki, Toshio; Kubo, Masaharu; Nishimura, Kotaro; and Yasui, Tokumasa, 4,261,004, Cl. 357-51.000.

Kubodera, Shoji: *See—*
Suzuki, Gyoichi; Ando, Ryo; Koyama, Tatsuo; Kubodera, Shoji; and Kondo, Renichi, 4,260,414, Cl. 75-60.000.

Kudelka, Herbert: *See—*
Piret, Norbert L.; Hopper, Meinolf; and Kudelka, Herbert, 4,260,588, Cl. 423-37.000.

Kuit, Rudolf S.: *See—*
Bakker, Pieter; Kuit, Rudolf S.; and Politiek, Jarig, 4,260,893, Cl. 250-397.000.
Bakker, Pieter; Kuit, Rudolf S.; and Politiek, Jarig, 4,260,897, Cl. 250-492.00A.

Kumar, Kaplesh; and Das, Dilip K., to Charles Stark Draper Laboratory, Inc., The. Differential expansion volume compaction. 4,260,582, Cl. 264-111.000.

Kummer, Emanuel, to Gebrueder Buehler AG. Process and apparatus for measuring the brightness of mill-comminuted products, especially flour. 4,260,263, Cl. 356-448.000.

Kuntz, Emile, to Rhone-Poulenc Industries. Telomerization process. 4,260,750, Cl. 544-178.000.

Kunz, Raymond W.: *See—*
Walter, Henry J.; Kunz, Raymond W.; and Shoemaker, Richard E., 4,260,875, Cl. 219-364.000.

Kunzler, Jay F.: *See—*
Keogh, Philip L.; Kunzler, Jay F.; and Niu, Gregory C. C., 4,260,725, Cl. 526-279.000.

Kurata, Junichi: *See—*
Morii, Takashi; and Kurata, Junichi, 4,260,162, Cl. 369-33.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Asano, Kiro; Tamura, Humio; Tanaka, Hiromitsu; and Enomotol, Satoru, 4,260,736, Cl. 536-5.000.

Kurihara, Mamoru; Ezaki, Kiyoshi; and Takahashi, Haruo, to Bridgestone Tire Co., Ltd. Oil boom. 4,260,285, Cl. 405-68.000.

Kurt Manufacturing Company, Inc.: *See—*
Kuban, William G., 4,259,815, Cl. 51-205.00R.

Kurtz, Robert J.: *See—*
McLeod, Francis; Silverstein, Spencer; and Kurtz, Robert J., 4,259,870, Cl. 73-861.250.

Kurz, Craven H. Orthodontic elastic ligature applicator for lingual orthodontic appliances. 4,260,374, Cl. 433-3.000.

Kurzhals, Gerhard: *See—*
Finkelstein, Wolfgang; Riegel, Hans; and Kurzhals, Gerhard, 4,259,898, Cl. 98-40.00D.

Kuska, Vladislav: *See—*
Kolinsky, Miloslav; Macho, Vendelin; Porubsky, Juraj; Kuska, Vladislav; Manas, Jaroslav; Sykora, Stanislav; and Lukas, Rudolf, 4,260,541, Cl. 260-45.8NT.

Kutnyak, Thomas A., to Automation Industries, Inc. High pressure hose construction and method of and apparatus for making the same. 4,259,991, Cl. 138-127.000.

Kuus, Gijsbert; de Vaan, Robertus L. C.; Jacobs, Cornelis A. J.; and Smulders, Herman A. G. S., to U.S. Philips Corporation. Electric device provided with a switch which is designed as a discharge tube. 4,260,934, Cl. 315-326.000.

Kuxdorf, Bernhard: *See—*
Kaiser, Karl; Willms, Robert; and Kuxdorf, Bernhard, 4,260,847, Cl. 585-833.000.

Kwan, Joe W. M.: *See—*
Ahlborn, Boye; and Kwan, Joe W. M., 4,260,927, Cl. 310-300.000.

Kyowa Hakko Kogyo Co., Ltd.: *See—*
Tsuda, Mitsuru; and Tatano, Toshio, 4,260,679, Cl. 435-10.000.

Labino, Dominick. Instrument for measuring the softening temperature of glass. 4,259,860, Cl. 73-17.00R.

Lacroix, Roger, to Ciba-Geigy Corporation. Stable concentrated solution of a dye of the disazo class. 4,260,391, Cl. 8-519.000.

Ladd, Robert G.: *See—*
Poppe, Wassily; Craddock, Charles F.; Gutekunst, Robert W.; Ladd, Robert G.; and Mager, Sue A., 4,260,567, Cl. 264-25.000.

Lalieu, Leon M. Earring with selectable decorative element. 4,259,850, Cl. 63-13.000.

Lalikos, James M.; Gazda, Chester T.; and O'Melia, Lawrence, to Titeflex Corporation. Chafe or fire sleeve for hose. 4,259,989, Cl. 138-109.000.

Lamaudiere, Paul F. T., to AVRI S.A. Electric pump, particularly for windscreen washers. 4,260,340, Cl. 417-412.000.

Lambert, Michael B.; and Della-Moretta, Leonard B., to United States of America, Agriculture. Synchronized flail for treatment of forestry residues. 4,259,834, Cl. 56-504.000.

Lamberti, Vincent; and Ronort, Mark D., to Lever Brothers Company. Detergent compositions. 4,260,513, Cl. 252-174.190.

Lamson & Sessions Co., The: *See—*
Capuano, Terry D., 4,259,889, Cl. 411-417.000.

Langan, Ervin C., to W.E.F.C.O., Inc. Flail-type mulcher cultivator. 4,260,027, Cl. 172-45.000.

Lanier Business Products, Inc.: *See—*
Titus, Theodore, IV, 4,261,021, Cl. 360-79.000.

Lapinski, John R.: *See—*
French, Harry C.; Lapinski, John R.; and MacCready, John J., 4,260,091, Cl. 224-311.000.

Lapis, Karoly; Szende, Bela; Jeney, Andreas; Kopper, Laszlo; Simon, Karoly; Tyihak, Erno; Kisfaludy, Lajos; Kovacs, Lajos; and Dobo, Gyorgy, to Richter Gedeon Vegyeszeti Gyar Rt. Pharmaceutical

compositions and process for the preparation of same. 4,260,595, Cl. 424-10.000.
Larson, William M.: *See—*
Harman, James R.; Larson, William M.; and Threat, J. B., 4,260,136, Cl. 254-380.000.
Laser-File Inc.: *See—*
Frohbach, Hugh F.; Myers, Robert E.; Peppers, Norman A.; Siwecki, Thomas L.; Schaefer, Louis F.; and Macovski, Albert, 4,261,007, Cl. 358-5.000.
Laska, Ronald C.; and Pone, Janis, to Pako Corporation. Photographic reprint system with film size code comparison. 4,260,244, Cl. 355-35.000.
Laubie, Michel: *See—*
Regnier, Gilbert; Canevari, Roger; Laubie, Michel; and Poignant, Jean-Claude, 4,260,610, Cl. 424-250.000.
Laudon, Monique: *See—*
Bugaut, Andree; and Laudon, Monique, 4,260,749, Cl. 544-166.000.
Laughman, Lanny M.: *See—*
Wayne, Robert J.; Laughman, Lanny M.; Chenausky, Peter P.; and Buczek, Carl J., 4,260,958, Cl. 331-94.5PE.
Laurenz, Frank R. Electric gate with semi-protected electrode. 4,260,137, Cl. 256-10.000.
Laurer, Peter R.: *See—*
Horner, Michael; Nissen, Axel; Laurer, Peter R.; Irgang, Matthias; and Pasedach, Heinrich, 4,260,829, Cl. 568-462.000.
Lavens, Charles A. Hitch apparatus for a steerable towed vehicle. 4,260,174, Cl. 280-444.000.
Lawson, Richard L. Exhaust system washing apparatus. 4,259,945, Cl. 126-299.00E.
Lazarus, Stanley D.: *See—*
Bander, John A.; Lazarus, Stanley D.; and Twilley, Ian C., 4,260,735, Cl. 528-279.000.
Lazov, Lyuben K.: *See—*
Koychev, Todor Y.; Georgiev, Georgi M.; Lazov, Lyuben K.; and Valchev, Alexander Y., 4,259,919, Cl. 118-47.000.
Leach Company: *See—*
Gollnick, Cyril R., 4,260,316, Cl. 414-501.000.
Leaver, Samuel L. Belt buckle holster. 4,260,087, Cl. 224-163.000.
Lebecque, Irene E. M.: *See—*
Lebecque, Maurice G. N. G., 4,260,272, Cl. 401-4.000.
Lebecque, Maurice G. N. G., to Lebecque, Irene E. M. Processor and dispenser. 4,260,272, Cl. 401-4.000.
Lecerf, Andre; and Caillaud, Therese, to SAFT Leclanche. Positive active material for an electric cell with a non-aqueous electrolyte. 4,260,668, Cl. 429-194.000.
Lee, Henry L., Jr., to Lee Pharmaceuticals. Formulation for self-curing artificial fingernails containing methoxyethyl methacrylate. 4,260,701, Cl. 525-303.000.
Lee, Martin J., to Technicon Instruments Corporation. Method and apparatus for obtaining an aliquot of a liquid in a gel medium. 4,260,392, Cl. 23-230.00R.
Lee, Myung-Ki: *See—*
Dostis, Irving; Lee, Myung-Ki; and Shimbo, Osamu, 4,261,053, Cl. 375-60.000.
Lee Pharmaceuticals: *See—*
Lee, Henry L., Jr., 4,260,701, Cl. 525-303.000.
Lee, Ronald B., to Zenith Radio Corporation. Spot arrest system. 4,261,014, Cl. 358-166.000.
Lee, Ta-Jyh: *See—*
Cragoe, Edward J., Jr.; Lee, Ta-Jyh; and Bicking, John B., 4,260,771, Cl. 548-187.000.
Lefevre, Joseph D.: *See—*
McIntyre, James A.; Phillips, Robert F.; and Lefevre, Joseph D., 4,260,469, Cl. 204-265.000.
Leka, George T.; and Paradis, Roland C., to Perkin-Elmer Corporation, The. Dual-piston reciprocating pump assembly. 4,260,342, Cl. 417-458.000.
Lemay, Richard A.; Huettner, Robert E.; Grandmaison, John P.; and Vernon, John H., to Honeywell Information Systems Inc. Communications processor employing line-dedicated memory tables for supervising data transfers. 4,261,033, Cl. 364-200.000.
Lentine, Frank N.: *See—*
Groves, William A.; and Lentine, Frank N., 4,260,379, Cl. 433-102.000.
Lenzer, Xaver, to Karl Mengele & Sohne. Gearing arrangement for an agricultural attachment. 4,259,830, Cl. 56-10.800.
Leonard, William J., Jr.: *See—*
Wingard, Robert E., Jr.; and Leonard, William J., Jr., 4,260,714, Cl. 526-271.000.
Lepp, Cyrus A.; and Odstrchel, Gerald, to Corning Glass Works. Determining creatine kinase isoenzmes via immobilized antibody-isoenzyme complexes. 4,260,678, Cl. 435-7.000.
Letort, C. A.; Llop, Helenio; and Grandjacques, B., to Societe d'Optique, Precision Electronique et al Mecanique-SOPELEM. Process for checking the dimension of a part. 4,260,260, Cl. 356-385.000.
Letton, James C., to Procter & Gamble Company, The. Detergent composition consisting essentially of biodegradable nonionic surfactant and cationic surfactant containing ester or amide. 4,260,529, Cl. 252-547.000.
Leussink, Reinhard; Metger, Manfred; and Fritz, Adolf, to Robert Bosch GmbH. Apparatus for generating an ignition control signal for an internal combustion engine. 4,259,934, Cl. 123-424.000.
Lever Brothers Company: *See—*
Barrett, Dennis P., 4,260,507, Cl. 252-121.000.
Bory, Barbara H.; and Kessler, Alan B., 4,260,054, Cl. 206-0.500.
Fox, Daniel J.; Van Blarcom, David; and Rubin, Fred K., 4,260,528, Cl. 252-525.000.
Hartmann, Karl; Bartels, Klaus; and Kraffert, Erich, 4,260,640, Cl. 426-516.000.
Lamberti, Vincent; and Ronort, Mark D., 4,260,513, Cl. 252-174.190.
Levine, Fred. Brackets for mounting motors. 4,260,125, Cl. 248-675.000.
Levine, Robert A. Device for obtaining stool samples. 4,259,964, Cl. 128-638.000.
Levinson, Samuel: *See—*
DeCristofaro, Nicholas J.; Levinson, Samuel; and Sexton, Peter, 4,260,666, Cl. 428-668.000.
Levy, Sidney. Solvent extraction of alcohols from water solutions with fluorocarbon solvents. 4,260,836, Cl. 568-918.000.
Lewis, Kenneth D.; Charlton, Andrew P.; Nyrop, Per; and Merediz, Tristan O., to Dorr-Oliver Incorporated. Multiple hydrocyclone device. 4,260,480, Cl. 209-211.000.
Lewis, Robert D., to Armstrong Cork Company. Additive-solvent process to form embossed product. 4,260,390, Cl. 8-481.000.
Lewis, Robert M.: *See—*
Sarcia, Domenico S.; Harvell, John T.; and Lewis, Robert M., 4,259,844, Cl. 62-6.000.
Lewyn, Lanny L., to Hughes Aircraft Company. Measurement system having pole zero cancellation. 4,260,951, Cl. 328-165.000.
Leybold - Heraeus GmbH: *See—*
Reimpell, Uwe; Reiter, Reinhard; and Grein, Lutz, 4,259,979, Cl. 137-315.000.
Lhonore, Pierre; Quibel, Jacques; and Jacquinot, Bernard, to Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques. Process of making nitroparaffins by nitration in the gaseous phase. 4,260,838, Cl. 568-947.000.
Liberty Fabrics of NY, Inc.: *See—*
Krug, Herbert A.; and Gluckin, Gerald, 4,259,749, Cl. 2-244.000.
Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Beis, Konstantinos, 4,260,961, Cl. 333-21.00A.
Lichtblau, George J. Asymmetrical antennas for use in electronic security systems. 4,260,990, Cl. 343-742.000.
Licinvest AG: *See—*
Ackeret, Peter, 4,259,802, Cl. 40-513.000.
Liebe, Werner: *See—*
Weyde, Edith; von Konig, Anita; and Liebe, Werner, 4,260,674, Cl. 430-271.000.
Lifewell Corporation: *See—*
Hatanaka, Takefumi, 4,260,115, Cl. 241-236.000.
Lilly Industries Limited: *See—*
Roast, William G.; and Adnams, Geoffrey E., 4,260,357, Cl. 425-472.000.
Lim-Holding S.A.: *See—*
Schmidt, Oskar; and Sibral, Walter, 4,260,729, Cl. 528-68.000.
Lim, Hui C.: *See—*
Scott-Jackson, Dennis G.; and Lim, Hui C., 4,259,783, Cl. 30-384.000.
Limbert, Frank J., to Mobay Chemical Corporation. Stabilized polycarbonate compositions. 4,260,537, Cl. 260-45.85B.
Lindbom, Torsten H.: *See—*
Engelberger, Joseph F.; Lindbom, Torsten H.; Dunne, Maurice J.; Perzley, William; Roberts, Wilbur N.; and Gardner, Horace L., 4,260,940, Cl. 318-562.000.
Engelberger, Joseph F.; Lindbom, Torsten H.; Dunne, Maurice J.; Perzley, William; Roberts, Wilbur N.; and Gardner, Horace L., 4,260,941, Cl. 318-562.000.
Linde Aktiengesellschaft: *See—*
Weber, Gunter, 4,260,590, Cl. 423-226.000.
Wernicke, Hans J.; Kreuter, Walter; and Schliebener, Claus, 4,260,474, Cl. 208-57.000.
Lindhag, Carl L., to Boise Cascade Corporation. Facing and journal turning machine. 4,259,885, Cl. 82-4.00R.
Lindsay, William F.; Meintrup, Robert A.; and Slawny, Howard J., to Grain Processing Corporation. Laminated absorbent process. 4,260,443, Cl. 156-220.000.
Linhart, Friedrich; Girgensohn, Bjoern; Reissenweber, Gernot; and Hickmann, Eckhard, to BASF Aktiengesellschaft. Preparation of O,N-disubstituted hydroxylamines. 4,260,562, Cl. 564-300.000.
Liotta, Domingo S.; and DeLiotta, Holga E. T. Frame support for cardiac tissue valves. 4,259,753, Cl. 3-1.500.
Lipinski, John J.: *See—*
McCarthy, Robert R.; and Lipinski, John J., 4,260,068, Cl. 220-221.000.
Lister, Gordon H., to Sandoz Ltd. Finishing process. 4,260,389, Cl. 8-491.100.
Litel, James G.; and Hefner, George R. Dental apparatus. 4,260,376, Cl. 433-29.000.
Liu, Ping Y., to General Electric Company. Polycarbonate compositions. 4,260,693, Cl. 525-148.000.
Livigni, Russell A.: *See—*
Aggarwal, Sundar L.; Hargis, Ivan G.; Livigni, Russell A.; and Fabris, Hubert J., 4,260,519, Cl. 252-431.00L.
Aggarwal, Sundar L.; Hargis, Ivan G.; Livigni, Russell A.; and Fabris, Hubert J., 4,260,712, Cl. 526-181.000.
Llop, Helenio: *See—*
Letort, C. A.; Llop, Helenio; and Grandjacques, B., 4,260,260, Cl. 356-385.000.
Lloyd, Raymond A.: *See—*
Holloway, Ian P.; and Lloyd, Raymond A., 4,260,190, Cl. 297-361.000.

Locatelli, Jean-Louis; and Macabrey, Louis, to Rhone-Poulenc Industries. Polypropylene/glass fiber/imido prepolymer based compositions. 4,260,539, Cl. 260-42.140.
Lockett, James F., to Geosource Inc. Foreign object discriminator for sorting apparatus. 4,260,062, Cl. 209-582.000.
Lofts, Denis L., to British Aerospace. Turbo compressor. 4,260,339, Cl. 417-406.000.
Logan, Robert T.: *See*—
Cairns, James; Logan, Robert T.; McGarry, George; Roy, Robert G.; and Woods, Gilbert F., 4,260,605, Cl. 424-243.000.
Lohmann, Robert P.: *See*—
Markowski, Stanley J.; and Lohmann, Robert P., 4,260,367, Cl. 431-353.000.
Lohn, Christiaan F. Apparatus for board game. 4,260,158, Cl. 273-267.000.
Lomberg, Ulrich: *See*—
Hartkopf, Heinz; and Lomberg, Ulrich, 4,259,884, Cl. 82-1.500.
Lonchampt, Jacques: *See*—
Tucoulat, Marcel J.; and Lonchampt, Jacques, 4,260,504, Cl. 252-73.000.
Lopez, Fred T. Precast concrete modular building panel. 4,259,824, Cl. 52-612.000.
L'Oreal: *See*—
Bugaut, Andree; and Laudon, Monique, 4,260,749, Cl. 544-166.000.
Lorenz, Donald H.; and Gruber, Bruce A., to GAF Corporation. Copolymerizable, ultraviolet light absorber 2-(2H-benzotriazol-2-yl)-4-alkylphenol acrylic acid esters. 4,260,768, Cl. 548-261.000.
Lorenz, Donald H.: *See*—
Gruber, Bruce A.; and Lorenz, Donald H., 4,260,809, Cl. 560-138.000.
Lorenz, Joachim: *See*—
Berrer, Dagmar; Lorenz, Joachim; and Grade, Reinhardt, 4,260,753, Cl. 544-208.000.
Lorenz, Kurt: *See*—
Weber, Heinrich; Lorenz, Kurt; and Dungs, Horst, 4,260,458, Cl. 202-121.000.
Loucks, George R.; and Williams, Frank J., III, to General Electric Company. Method for making aromatic polyformals. 4,260,733, Cl. 528-219.000.
Lovdin, Arne L.: *See*—
Persson, Mats A.; and Lovdin, Arne L., 4,261,052, Cl. 370-59.000.
Love, William J., Jr.: *See*—
Fellnor, John R.; and Love, William J., Jr., 4,260,373, Cl. 432-110.000.
Loveless, John H.; and Seamone, Woodrow, to Johns Hopkins University, The. Chin controller system for powered wheelchair. 4,260,035, Cl. 180-6.500.
Lovelock, James E., to Hewlett-Packard Company. Corona discharge devices. 4,260,884, Cl. 250-324.000.
Lowe, Lynnwood: *See*—
Eckert, Alton B., Jr.; Lowe, Lynnwood; and McFiggans, Robert B., 4,259,902, Cl. 101-91.000.
Loyd, Morris S.; and O'Neill, Michael S., to Rockwell International Corporation. Reinforced ceramic structure. 4,260,657, Cl. 428-113.000.
Lubrizol Corporation, The: *See*—
Forsberg, John W., 4,260,500, Cl. 252-33.000.
Lucas Industries Limited: *See*—
Baston, Trevor A. J.; and Wynne, John R., 4,260,121, Cl. 244-213.000.
Chafer, Henry J.; and Purkiss, Anthony J., 4,261,025, Cl. 361-257.000.
Joyes, John F., 4,260,938, Cl. 318-434.000.
Luce, Betty M.: *See*—
Berdan, Betty L.; and Luce, Betty M., 4,260,449, Cl. 156-628.000.
Lugosi, Robert; Fechko, George J.; Male, Alan T.; Haller, Henry E., III; and Mole, Cecil J., to Westinghouse Electric Corp. Conductor bar for dynamoelectric machines. 4,260,924, Cl. 310-213.000.
Lukas, Rudolf: *See*—
Kolinsky, Miloslav; Macho, Vendelin; Porubsky, Juraj; Kuska, Vladislav; Manas, Jaroslav; Sykora, Stanislav; and Lukas, Rudolf, 4,260,541, Cl. 260-45.8NT.
Lukenbach, Elvin R.: *See*—
Armstrong, David P.; Lukenbach, Elvin R.; and Verdicchio, Robert J., 4,260,550, Cl. 260-410.000.
Lumbra, Ralph C.: *See*—
Morrison, Ward D.; and Lumbra, Ralph C., 4,260,029, Cl. 173-1.000.
Lumenition Limited: *See*—
Coates, John P., 4,259,939, Cl. 123-605.000.
Lun Ho, Bin; and Guerini, Albert, to PRIAM. Manufacturing fixture and support for magnetic disc. 4,260,208, Cl. 312-242.000.
Lundgren, Carl W., Jr.: *See*—
Barnett, William T.; Lundgren, Carl W., Jr.; Rummler, William D.; and Wang, York Y., 4,261,056, Cl. 455-273.000.
Lundin, Robert S.; and Hathway, Randal B., to Superior Electric Company, The. Interconnection for the windings and lead wires of a motor. 4,260,917, Cl. 310-71.000.
Lutz, Andre: *See*—
Heymes, Rene; and Lutz, Andre, 4,260,747, Cl. 544-27.000.
Lynn, William F., to Precision Pneumatic Palletizer, Inc. Palletizer. 4,260,309, Cl. 414-46.000.
Lyons, James E.; Suld, George; and Shinn, Robert W., to Suntech, Inc. Catalytic process for the conversion of toluene to equimolar amounts of phenol acetate and methylene diacetate. 4,260,808, Cl. 560-131.000.
M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See*—
Melzer, Rudolf, 4,260,149, Cl. 271-236.000.
M&T Chemicals Inc.: *See*—
Russell, David B., 4,260,535, Cl. 260-33.6UA.
Mabuchi, Kenichi; and Katunuma, Tatuo, to Mabuchi Motor Co. Ltd. Rotating unit. 4,259,809, Cl. 46-249.000.
Mabuchi, Kenichi, to Mabuchi Motor Co. Ltd. Toy energy supply device. 4,260,041, Cl. 185-40.00R.
Mabuchi Motor Co. Ltd.: *See*—
Mabuchi, Kenichi; and Katunuma, Tatuo, 4,259,809, Cl. 46-249.000.
Mabuchi, Kenichi, 4,260,041, Cl. 185-40.00R.
Macabrey, Louis: *See*—
Locatelli, Jean-Louis; and Macabrey, Louis, 4,260,539, Cl. 260-42.140.
MacCready, John J.: *See*—
French, Harry C.; Lapinski, John R.; and MacCready, John J., 4,260,091, Cl. 224-311.000.
MacFarland, David R.: *See*—
Turley, Richard J.; and MacFarland, David R., 4,260,728, Cl. 528-57.000.
Macho, Vendelin: *See*—
Kolinsky, Miloslav; Macho, Vendelin; Porubsky, Juraj; Kuska, Vladislav; Manas, Jaroslav; Sykora, Stanislav; and Lukas, Rudolf, 4,260,541, Cl. 260-45.8NT.
Mackal, Glenn H. Automatic inflator. 4,260,075, Cl. 222-5.000.
Mackles, Leonard, to Bristol-Myers Company. Edible unit dosage form consisting of outer mannitol shell and inner liquid or gel center and method for manufacturing the same. 4,260,596, Cl. 424-14.000.
Macneal, Lachlan D. C.: *See*—
Bennett, Aubrey; Macneal, Lachlan D. C.; and Sinclair, James S., 4,260,063, Cl. 211-4.000.
Macomson, James B. Method of making an ornamental replica of a hand. 4,260,574, Cl. 264-129.000.
Macovski, Albert: *See*—
Frohbach, Hugh F.; Myers, Robert E.; Peppers, Norman A.; Siwecki, Thomas L.; Schaefer, Louis F.; and Macovski, Albert, 4,261,007, Cl. 358-5.000.
MacPherson, Ruth B. Magnified graphical copier. 4,259,784, Cl. 33-1.00K.
Maddox, Lodric L., to Clorox Company, The. Stabilized alkali metal percarbonate powder bleach. 4,260,508, Cl. 252-99.000.
Maeda, Minoru: *See*—
Onoda, Seiichi; Yamada, Shoji; Minai, Yasuo; Maeda, Minoru; Kita, Shin; and Tanaka, Mitsuo, 4,260,883, Cl. 250-226.000.
Maedgen, Malcolm A., Jr., to Biogenesis, Inc. Method and apparatus for airborne release of insect eggs. 4,260,108, Cl. 239-171.000.
Magdo, Ingrid E.; and Magdo, Steven, to International Business Machines Corporation. Integrated circuit structures with full dielectric isolation and a novel method for fabrication thereof. 4,261,003, Cl. 357-49.000.
Magdo, Steven: *See*—
Magdo, Ingrid E.; and Magdo, Steven, 4,261,003, Cl. 357-49.000.
Mager, Sue A.: *See*—
Poppe, Wassily; Craddock, Charles F.; Gutekunst, Robert W.; Ladd, Robert G.; and Mager, Sue A., 4,260,567, Cl. 264-25.000.
Magna Corporation: *See*—
Blair, Charles M., Jr., 4,260,019, Cl. 166-274.000.
Magnex Corporation: *See*—
Neu, William F., 4,260,450, Cl. 156-656.000.
Magolda, Ronald L.: *See*—
Nicolaou, Kyriacos C.; Magolda, Ronald L.; and Claremon, David A., 4,260,806, Cl. 560-118.000.
Magyar Vagon- Es Gepgyar: *See*—
Szalai, Gabor; Albrecht, Laszlo; and Szij, Peter, 4,260,042, Cl. 188-330.000.
Maier, Edward E.: *See*—
Didycz, William J.; Glassman, Donald; Maier, Edward E.; and Saniga, George T., 4,260,462, Cl. 203-22.000.
Maier, Gerhard; Rosenke, Udo; and Humbert, Manfred, to Maschinenfabrik B. Maier KG. Process and apparatus for the production of constituents of particle board panels. 4,260,113, Cl. 241-28.000.
Makabe, Hachiro: *See*—
Takenoya, Hideaki; and Makabe, Hachiro, 4,259,913, Cl. 112-158.00E.
Maki, Yoshiki; Idemoto, Atsushi; and Oda, Norimasa, to Japan Steel Works Ltd., The. Biaxial vent extruder. 4,260,264, Cl. 366-75.000.
Malarz, Antoni J.: *See*—
Rieck, Gerlad C.; and Malarz, Antoni J., 4,259,863, Cl. 73-862.400.
Male, Alan T.: *See*—
Lugosi, Robert; Fechko, George J.; Male, Alan T.; Haller, Henry E., III; and Mole, Cecil J., 4,260,924, Cl. 310-213.000.
Mallett, John H., to Singer Company, The. Simulation technique for generating a sudden open circuit on high current lines. 4,259,789, Cl. 434-366.000.
Mallory, William R.: *See*—
Morrison, Robert W., Jr.; Mallory, William R.; and Styles, Virgil L., 4,260,758, Cl. 544-262.000.
Maloomian, Laurence G. System and method for composite display. 4,261,012, Cl. 358-93.000.
Manas, Jaroslav: *See*—
Kolinsky, Miloslav; Macho, Vendelin; Porubsky, Juraj; Kuska, Vladislav; Manas, Jaroslav; Sykora, Stanislav; and Lukas, Rudolf, 4,260,541, Cl. 260-45.8NT.
Mandi, Attila: *See*—
Hermecz, Istvan; Meszaros, Zoltan; Breining, Tibor; Virag, Sandor; Vasvari nee Debreczi, Lelle; Horvath, Agnes; Nagy, Gabor;

Mandi, Attila; Szuts, Tamas; Bitteer, Istvan; and Sebestyen, Gyula, 4,260,612, Cl. 424-251.000.

Mang, Josef: *See—*
Graaf, Max V.; and Mang, Josef, 4,260,324, Cl. 414-735.000.

Mangin, Pierre M. F.: *See—*
Durand, Daniel C.; and Mangin, Pierre M. F., 4,260,709, Cl. 526-137.000.

Mangold, Dietrich: *See—*
Jacobs, Peter; Mangold, Dietrich; and Hamprecht, Gerhard, 4,260,559, Cl. 260-513.600.
Jacobs, Peter; Hamprecht, Gerhard; and Mangold, Dietrich, 4,260,560, Cl. 260-543.00R.

Manizza, Guelfo A.; and Neale, Douglas L., to Federal Paper Board Company, Inc. Tray container with reinforced sidewalls. 4,260,098, Cl. 229-31.00R.

Mann, Walter J.; and Rosenblatt, Aaron A., to QED. Optical food probe. 4,260,261, Cl. 356-402.000.

Mansurov, Midkhat M.: *See—*
Berenov, Alexandr D.; Krainev, Vladislav P.; Mansurov, Midkhat M.; and Silin, Evgeny L., 4,260,010, Cl. 164-445.000.

Manville Forest Products: *See—*
Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., 4,260,071, Cl. 220-445.000.

Marchal, Paul H., to Air Industrie. Process for the compression of steam and thermal circuits for its implementation. 4,260,335, Cl. 417-68.000.

Marchesi, Franco, to Rockwell-Rimoldi S.p.A. Needle control device for sewing machines. 4,259,916, Cl. 112-221.000.

Marcuse, Dietrich, to Bell Telephone Laboratories, Incorporated. Multimode fiber with z-dependent index profile. 4,260,221, Cl. 350-96.310.

Marino, Michael J.: *See—*
Paull, Seymour; and Marino, Michael J., 4,260,058, Cl. 206-443.000.

Markowski, Stanley J.; and Lohmann, Robert P., to United Technologies Corporation. Fuel nozzle for burner construction. 4,260,367, Cl. 431-353.000.

Marliave, Jeffrey B. Method and apparatus for rearing of planktonic larvae of marine animals. 4,259,926, Cl. 119-2.000.

Marlowe, Richard E., to Automation Industries, Inc. Data evaluator using an adjustable endless loop magnetic tape. 4,261,022, Cl. 360-90.000.

Martignoni, Pasquale; Murfree, James A.; Nappier, Henry A.; Ayers, Orval E.; and Chew, William M., to United States of America, Army. Supports and preparation process for the manufacture of a calcium chemical pump for HF/DF laser. 4,260,653, Cl. 427-247.000.

Martin, John C.: *See—*
Martin, Paul H.; and Martin, John C., 4,260,317, Cl. 414-517.000.

Martin, Michael A.: *See—*
Johns, Allan T.; and Martin, Michael A., 4,261,038, Cl. 364-482.000.

Martin, Paul H.; and Martin, John C., to Diesel Equipment Limited. Telescopic body with ejection bulkhead. 4,260,317, Cl. 414-517.000.

Marumo, Kuniomi: *See—*
Kametaka, Norio; Marumo, Kuniomi; Tokuda, Kiyonori; and Sekiguchi, Kazuo, 4,260,813, Cl. 560-234.000.

Maruyama, Toshio: *See—*
Asano, Hiroaki; and Maruyama, Toshio, 4,259,940, Cl. 125-11.0CD.

Marwede, Gunter: *See—*
Sylvester, Gerd; Witte, Josef; and Marwede, Gunter, 4,260,707, Cl. 526-114.000.

Marx, Dieter: *See—*
Traeger, Rolf; Marx, Dieter; and Knutti, Helmut, 4,260,217, Cl. 350-1.200.

Marx, Matthias: *See—*
Ohlinger, Rainer; Falkenstein, Georg; Wurmb, Rolf; and Marx, Matthias, 4,260,554, Cl. 260-453.0SP.

Maschinenfabrik Augsburg-Nurnberg: *See—*
Hirt, Dieter; and Steigenberger, Richard, 4,260,204, Cl. 308-9.000.

Maschinenfabrik B. Maier KG: *See—*
Maier, Gerhard; Rosenke, Udo; and Humbert, Manfred, 4,260,113, Cl. 241-28.000.

Maschinenfabrik Buckau R. Wolf Aktiengesellschaft: *See—*
Becker, Anton, 4,260,050, Cl. 198-508.000.

Maschinenfabrik Hennecke GmbH: *See—*
Rohrig, Lothar; Bucher, Gottfried; and Klahre, Horst, 4,260,355, Cl. 425-258.000.

Mashita, Kentaro: *See—*
Matsushima, Shunsuke; Hata, Kazuhiko; Mashita, Kentaro; Kanagawa, Shuichi; Nakao, Shinji; Nakai, Kiyoshi; and Kamio, Kunimasa, 4,260,831, Cl. 568-719.000.

Masopust, Otto T., Jr.: *See—*
Brown, Donald R.; Masopust, Otto T., Jr.; and Meal, John R., 4,260,850, Cl. 174-52.00R.

Massey, David T. Phase control circuit for regulating power. 4,260,947, Cl. 323-322.000.

Masuda, Jun: *See—*
Harada, Masato; Ishigaki, Yoshikatsu; Yamada, Sadahiko; Suzuki, Atsushi; Masuda, Jun; Hamazaki, Tadamitsu; Yoshida, Toshiaki; and Fukuda, Kiyoto, 4,260,723, Cl. 526-115.000.

Masuhara, Toshiaki; Minato, Osamu; Sakai, Yoshio; Sasaki, Toshio; Kubo, Masaharu; Nishimura, Kotaro; and Yasui, Tokumasa, to Hitachi, Ltd. Semiconductor device. 4,261,004, Cl. 357-51.000.

Masunaga, Katsuro: *See—*
Umemura, Sumio; Matsui, Kanenobu; Ikeda, Yoshinari; Masunaga, Katsuro; Kadota, Takumi; Fujii, Kozo; Nishihira, Keigo; and Matsuda, Masaoki, 4,260,810, Cl. 560-204.000.

Matsuda, Masaoki: *See—*
Umemura, Sumio; Matsui, Kanenobu; Ikeda, Yoshinari; Masunaga, Katsuro; Kadota, Takumi; Fujii, Kozo; Nishihira, Keigo; and Matsuda, Masaoki, 4,260,810, Cl. 560-204.000.

Matsui, Kanenobu: *See—*
Umemura, Sumio; Matsui, Kanenobu; Ikeda, Yoshinari; Masunaga, Katsuro; Kadota, Takumi; Fujii, Kozo; Nishihira, Keigo; and Matsuda, Masaoki, 4,260,810, Cl. 560-204.000.

Matsui, Kenichi; and Suzuki, Nobuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Charge-transfer image sensor. 4,260,900, Cl. 250-578.000.

Matsuoka, Yoshio: *See—*
Sindo, Isao; Matsuoka, Yoshio; and Yoshida, Kasumi, 4,260,580, Cl. 422-64.000.

Matsushima, Masaru: *See—*
Komai, Takeshi; and Matsushima, Masaru, 4,260,692, Cl. 525-273.000.

Matsushima, Shunsuke; Hata, Kazuhiko; Mashita, Kentaro; Kanagawa, Shuichi; Nakao, Shinji; Nakai, Kiyoshi; and Kamio, Kunimasa, to Sumitomo Chemical Company, Limited. Oligomerization of m-isopropenylphenol. 4,260,831, Cl. 568-719.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Urata, Yoshihito; and Sasaki, Toshiharu, 4,260,120, Cl. 242-201.000.

Matsushita Electric Industrial Co., Ltd. Wireless Research Laboratory: *See—*
Tomimoto, Tetsuo; Nagaoka, Yoshitomi; and Sasaki, Reiichi, 4,261,009, Cl. 358-27.000.

Matthews, Russell B., to Johnson Controls, Inc. Fuel ignition control arrangement having a timing circuit with fast reset. 4,260,362, Cl. 431-69.000.

Matthey Rustenburg Refiners (Pty.) Limited: *See—*
Oliver, Raymond E.; and Payne, John B., 4,260,139, Cl. 266-154.000.

Maucher, Edmund; Hofer, Friedrich-Wilhelm; and Schwerin, Gunther, to Robert Bosch GmbH. Control apparatus for a hydraulic power consumer. 4,259,986, Cl. 137-596.120.

Maximenko, Vladilen I.: *See—*
Bitjurin, Valentin A.; Maximenko, Vladilen I.; and Medin, Stanislav A., 4,260,913, Cl. 310-11.000.

Mayer, Joseph; and Sherlock, Margaret H., to Schering-Corporation. Process for preparing 1-aminonaphthyridines. 4,260,759, Cl. 544-333.000.

Mays, Robert K.: *See—*
Wason, Satish K.; and Mays, Robert K., 4,260,454, Cl. 162-181.00C.

Mayumi, Masakatsu; Mitooka, Kenji; and Fujiwara, Sigeharu, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Process for producing thick reinforced plastic articles. 4,260,445, Cl. 156-276.000.

Mazanek, Jan; and Blahak, Johannes, to Bayer Aktiengesellschaft. Polymer containing amino groups and hydroxyl and/or mercapto groups and the use thereof for the production of polyurethane resins. 4,260,557, Cl. 260-455.00R.

Mazzorana, Alfred B., to Societe de Paris et du Rohne. Locking devices for electric starter actuators. 4,260,903, Cl. 290-48.000.

MCA Disco-Vision, Inc.: *See—*
Holmes, John R.; and Jordan, Roy G., 4,260,360, Cl. 425-548.000.

McCarter, Robert J., to United States of America, Commerce. Use of sulphur as an additive to inhibit the smoldering combustion of materials. 4,260,660, Cl. 428-284.000.

McCarthy, Alfred F., to Aavid Engineering, Inc. Miniature heat sink. 4,261,005, Cl. 357-81.000.

McCarthy, Robert R.; and Lipinski, John J., to Texaco Inc. Storage tank and floating roof with a gauge well having a floating seal therein. 4,260,068, Cl. 220-221.000.

McClelland, S. Barry, to Micropolis Corporation. Compatible digital magnetic recording system. 4,261,019, Cl. 360-40.000.

McCollum, James H., Jr.; and Kammerer, Leo P., to Rockwell International Corporation. Throttle tracking in multiengine aircraft. 4,259,838, Cl. 60-224.000.

McConnell, Paula M. Pet tag holder. 4,259,798, Cl. 40-10.00R.

McCormick-Goodhart, Mark H., to Energy Conversion Devices, Inc. Imaging apparatus. 4,260,250, Cl. 355-113.000.

McCullough, Harold E.: *See—*
Everhart, Billy M.; and McCullough, Harold E., 4,260,972, Cl. 335-129.000.

McFarland, William W.: *See—*
Ford, Mack L.; and McFarland, William W., 4,260,442, Cl. 156-207.000.

McFiggans, Robert B.: *See—*
Eckert, Alton B., Jr.; Lowe, Lynnwood; and McFiggans, Robert B., 4,259,902, Cl. 101-91.000.

McGahey, Dean C.; and Vest, Eugene W., to Texaco Inc. Fuel dispensing system with controlled vapor withdrawal. 4,260,000, Cl. 141-59.000.

McGarry, George: *See—*
Cairns, James; Logan, Robert T.; McGarry, George; Roy, Robert G.; and Woods, Gilbert F., 4,260,605, Cl. 424-243.000.

McGinnis, Edgar L.: *See—*
Carr, Norman L.; and McGinnis, Edgar L., 4,260,485, Cl. 210-728.000.

McGowan, George A.: *See—*
Halushka, Roman A.; and McGowan, George A., 4,260,180, Cl. 285-9.00M.

McIntyre, James A.; Phillips, Robert F.; and Lefevre, Joseph D., to Dow Chemical Company, The. Massive dual porosity gas electrodes. 4,260,469, Cl. 204-265.000.

McLeod, Francis; Silverstein, Spencer; and Kurtz, Robert J., to Howmedica Inc. Doppler method of measuring flow. 4,259,870, Cl. 73-861.250.

McManus, Ira J. Precast concrete joist system. 4,259,822, Cl. 52-334.000.

McMullen, Joseph C.: *See—*
Russell, John N.; Smith, David W.; and McMullen, Joseph C., 4,259,837, Cl. 60-39.550.

Meal, John R.: *See—*
Brown, Donald R.; Masopust, Otto T., Jr.; and Meal, John R., 4,260,850, Cl. 174-52.00R.

Mebus, Henry R.; and Miaskoff, Leonard, to Harris Corporation. Signature handling apparatus. 4,260,145, Cl. 270-54.000.

Medem, Harald; Freitag, Dieter; and Reinking, Klaus, to Bayer Aktiengesellschaft. Process for the preparation of aromatic polyesters. 4,260,695, Cl. 525-466.000.

Medin, Stanislav A.: *See—*
Bitjurin, Valentin A.; Maximenko, Vladilen I.; and Medin, Stanislav A., 4,260,913, Cl. 310-11.000.

Mednikov, Jury A.: *See—*
Samarynov, Jury V.; Mednikov, Jury A.; and Rozen, Alexandr S., 4,260,096, Cl. 228-158.000.

Medtek Corporation: *See—*
Starr, Gilbert, 4,261,041, Cl. 364-571.000.

Mehnert, Johannes. Molding device. 4,260,358, Cl. 425-532.000.

Mehta, Kay B.: *See—*
Collins, Thomas W.; and Mehta, Kay B., 4,261,045, Cl. 365-26.000.

Meiller, Francois: *See—*
Mirabel, Bernard; and Meiller, Francois, 4,260,388, Cl. 8-646.000.

Meintrup, Robert A.: *See—*
Lindsay, William F.; Meintrup, Robert A.; and Slawny, Howard J., 4,260,443, Cl. 156-220.000.

Meissner, David C.: *See—*
Summers, Frank V.; Meissner, David C.; and Scarlett, John C., 4,260,412, Cl. 75-35.000.

Melching, Jannes A.: *See—*
Bovenkamp, Jan; and Melching, Jannes A., 4,259,899, Cl. 98-115.0SB.

Melzer, Rudolf, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Sheet registration on feed table of printing press. 4,260,149, Cl. 271-236.000.

Mendoza, Abel, to Dow Chemical Company, The. Process for the removal of cyclic imidic ester impurities from an isocyanatoalkyl ester of an organic carboxylic acid. 4,260,811, Cl. 560-218.000.

Menzel, S. W. O., to Reed Irrigation Systems. Drip irrigation conduit. 4,260,111, Cl. 239-450.000.

Merck & Co., Inc.: *See—*
Baldwin, John J.; and Ponticello, Gerald S., 4,260,609, Cl. 424-250.000.
Christensen, Burton G., 4,260,618, Cl. 424-263.000.
Christensen, Burton G.; and Shih, David H., 4,260,627, Cl. 424-274.000.
Cragoe, Edward J., Jr.; Lee, Ta-Jyh; and Bicking, John B., 4,260,771, Cl. 548-187.000.
Dybas, Richard A.; Grier, Nathaniel; and Witzel, Bruce E., 4,260,760, Cl. 544-396.000.
Miller, Thomas W., 4,260,543, Cl. 260-245.20T.
Schuppner, Harry R., Jr., 4,260,741, Cl. 536-114.000.

Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Jonas, Rochus; Schliep, Hans-Jochen; and Schorscher, Ernst, 4,260,628, Cl. 424-274.000.

Merediz, Tristan O.: *See—*
Lewis, Kenneth D.; Charlton, Andrew P.; Nyrop, Per; and Merediz, Tristan O., 4,260,480, Cl. 209-211.000.

Merrell Toruade et Compagnie: *See—*
Casara, Patrick J.; Jung, Michel; and Metcalf, Brian W., 4,260,823, Cl. 562-571.000.

Merrill, Stewart H., to Eastman Kodak Company. Polycarbonate overcoats and binders for photoconductive layers and elements. 4,260,671, Cl. 430-67.000.

Messerly, James W.: *See—*
Cassutt, Thomas R.; Messerly, James W.; and Senderling, Ronald L., 4,260,700, Cl. 525-113.000.

Messerschmitt-Bolkow-Blohm GmbH: *See—*
Blindow, Friedrich-Karl; Decker, Jurgen; Kluibenschedl, Heinrich; Munding, German; Sowa, Armin; and Wagner, Harald, 4,260,194, Cl. 299-11.000.

Meszaros, Zoltan: *See—*
Hermecz, Istvan; Meszaros, Zoltan; Breining, Tibor; Virag, Sandor; Vasvari nee Debreczi, Lelle; Horvath, Agnes; Nagy, Gabor; Mandi, Attila; Szuts, Tamas; Bitteer, Istvan; and Sebestyen, Gyula, 4,260,612, Cl. 424-251.000.

Metallgesellschaft Aktiengesellschaft: *See—*
Eisenlohr, Karl H.; and Gaensslen, Hans, 4,260,472, Cl. 208-8.0LE.

Metcalf, Brian W.: *See—*
Casara, Patrick J.; Jung, Michel; and Metcalf, Brian W., 4,260,823, Cl. 562-571.000.

Metger, Manfred: *See—*
Leussink, Reinhard; Metger, Manfred; and Fritz, Adolf, 4,259,934, Cl. 123-424.000.

Metje, Heinz. Alignment system for offset printing presses. 4,259,904, Cl. 101-415.100.

Metzeler Schaum GmbH: *See—*
Buchert, Dieter; and Stelzer, Karl-Heinz, 4,260,353, Cl. 425-224.000.

Meyerle, Michael, to Zahnradfabrik Friedrichshafen AG. Hydromechanical load-splitting drive. 4,259,881, Cl. 74-687.000.

Meyers, Peter V.: *See—*
Fulop, Gabor F.; Betz, Jacob F.; Meyers, Peter V.; and Doty, Mitchell E., 4,260,427, Cl. 136-255.000.

Miaskoff, Leonard: *See—*
Mebus, Henry R.; and Miaskoff, Leonard, 4,260,145, Cl. 270-54.000.

Michaelis, Peter, to Ciba-Geigy Corporation. Mercaptan as an additive for lubricants. 4,260,503, Cl. 252-48.600.

Mickelsson, Sven-Mikael; and Hall, Sture R. Work table for machine tools. 4,260,307, Cl. 409-225.000.

Micko, Eric S.: *See—*
Hadden, David M.; and Micko, Eric S., 4,260,950, Cl. 324-438.000.

Micropolis Corporation: *See—*
McClelland, S. Barry, 4,261,019, Cl. 360-40.000.

Midcon Pipeline Equipment Co.: *See—*
Slavens, Clyde M.; and Clavin, Edward A., 4,260,869, Cl. 219-124.310.

Midland Metalcraft Company: *See—*
Price, Dennis D., 4,260,119, Cl. 242-157.00R.

Midland-Ross Corporation: *See—*
Griffiths, William C., 4,259,849, Cl. 62-271.000.

Midrex Corporation: *See—*
Summers, Frank V.; Meissner, David C.; and Scarlett, John C., 4,260,412, Cl. 75-35.000.

Mietzner, Franz G.: *See—*
Pfleger, Klaus; Zacher, Wieland; Boettcher, Klaus; Skorczyk, Ronald; Buechner, Oskar; and Mietzner, Franz G., 4,260,722, Cl. 526-68.000.

Miles Laboratories, Inc.: *See—*
Barton, Nancy K.; Greene, Carmine M.; and Rapkin, Myron C., 4,260,579, Cl. 422-56.000.

Miles, Melvin H.; and Fletcher, Aaron N., to United States of America, Navy. Thermal battery cells utilizing molten nitrates as the electrolyte and oxidizer. 4,260,667, Cl. 429-112.000.

Miller, Alan L., to Borg-Warner Corporation. Electronic shift control. 4,259,882, Cl. 74-862.000.

Miller, Anna K. Moisture absorbent mask covering the face, neck and ears. 4,259,748, Cl. 2-9.000.

Miller, Harold L., to Westinghouse Electric Corp. Current limiting fuse with auxiliary element. 4,260,976, Cl. 337-162.000.

Miller, J. Wayne, to Union Oil Company of California. Process for desulfurizing coal and producing synthetic fuels. 4,260,471, Cl. 208-8.0LE.

Miller, Jerry H.: *See—*
Rooney, Gerald A.; Kresge, Richard E.; and Miller, Jerry H., 4,260,082, Cl. 222-340.000.

Miller, Thomas W., to Merck & Co., Inc. Crystalline N-formimidoyl thienamycin. 4,260,543, Cl. 260-245.20T.

Milliken Research Corporation: *See—*
Kluger, Edward W.; Su, Tien-Kuei; and Thompson, Teresa J., 4,260,556, Cl. 260-465.50R.

Mills, Allen P., Jr.: *See—*
Kovacs, Terrence; Mills, Allen P., Jr.; and Pfeiffer, Loren N., 4,260,892, Cl. 250-388.000.

Milnes, Frank J.; Bucko, Robert J.; and Gavin, David F., to Olin Corporation. Tris-(polyalkoxyalkylated) isocyanurate compounds and their use as functional fluids. 4,260,505, Cl. 252-77.000.

Minai, Yasuo: *See—*
Onoda, Seiichi; Yamada, Shoji; Minai, Yasuo; Maeda, Minoru; Kita, Shin; and Tanaka, Mitsuo, 4,260,883, Cl. 250-226.000.

Minato, Osamu: *See—*
Masuhara, Toshiaki; Minato, Osamu; Sakai, Yoshio; Sasaki, Toshio; Kubo, Masaharu; Nishimura, Kotaro; and Yasui, Tokumasa, 4,261,004, Cl. 357-51.000.

Miner, Thomas G.: *See—*
Albright, Jay D.; Miner, Thomas G.; and Shepherd, Robert G., 4,260,816, Cl. 562-452.000.

Mings, Joe D.; and Torreno, Manuel L., Jr., to Texas Instruments Incorporated. Microelectronic remote switching circuit. 4,260,908, Cl. 307-270.000.

Minnesota Mining and Manufacturing Company: *See—*
Brown, Harvey A., 4,260,676, Cl. 430-517.000.
Gobran, Ramsis, 4,260,659, Cl. 428-217.000.
Krech, Roger I., 4,260,673, Cl. 430-143.000.
Schultz, William J.; and Smith, Samuel, 4,260,702, Cl. 525-334.000.
Winslow, John M.; and Klosterboer, Donald H., 4,260,677, Cl. 430-618.000.

Minolta Camera Kabushiki Kaisha: *See—*
Horie, Yoshihiro; Nagata, Kenzo; and Hatano, Manabu, 4,260,904, Cl. 307-113.000.
Murata, Tomoji; Shibazaki, Kenji; Arai, Kenichi; and Kitagawa, Tsuneo, 4,260,248, Cl. 355-60.000.
Ueda, Hiroshi; Miyamoto, Takayoshi; and Niwa, Masatake, 4,260,232, Cl. 354-152.000.

Minshall, Ronald H.; and Balthes, Gary E. Hinged container for bulk cure of tobacco. 4,259,787, Cl. 34-201.000.

Mirabel, Bernard; and Meiller, Francois, to Rhone-Poulenc Industries. Purification of anthocyan solutions. 4,260,388, Cl. 8-646.000.

Mishima, Hiroshi; Ogiso, Akira; and Kobayashi, Shinsaku, to Sankyo Company Limited. Polyprenyl derivatives. 4,260,551, Cl. 260-410.600.

Mita Industrial Co., Ltd.: *See—*
Kozuka, Nobuhiko; and Nakazawa, Toru, 4,260,238, Cl. 355-3.0TR.

Mitchell, William A.; and Seidel, William C., to General Foods Corporation. Process for modifying starch with sodium or calcium stearoyl-2-lactylate. 4,260,642, Cl. 426-579.000.

Mitooka, Kenji: *See—*
Mayumi, Masakatsu; Mitooka, Kenji; and Fujiwara, Sigeharu, 4,260,445, Cl. 156-276.000.

Mitsubishi Chemical Industries, Ltd.: *See—*
Mori, Hajime; Kohyama, Katsuhisa; Nakamura, Katsuhiko; and Sakata, Katsuyuki, 4,260,731, Cl. 528-173.000.
Muramatsu, Kozo; and Samizo, Kuniko, 4,260,680, Cl. 435-14.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Horiuchi, Toshiaki, 4,260,865, Cl. 200-320.000.

Mitsui, Kazuaki: *See—*
Kawamura, Michio; Kato, Takeshi; Ohira, Kouji; Nishimura, Katsusuke; and Mitsui, Kazuaki, 4,260,878, Cl. 235-92.0AC.

Mitsui Toatsu Chemicals Inc.: *See—*
Yamaguchi, Akihiro; Kobayashi, Tadashi; Yamaguchi, Keizaburo; Osawa, Kisuke; Murakami, Hisamichi; Yamato, Noboru; and Hasegawa, Akira, 4,260,179, Cl. 282-27.500.

Mitsuyasu, Masaki: *See—*
Watanabe, Noboru; Inoue, Tokuta; and Mitsuyasu, Masaki, 4,259,935, Cl. 123-478.000.

Mitzel, Wilhelm, to G.A.O. Gesellschaft fur Automation und Organisation mbH. Process and apparatus for separating flat sheet material. 4,260,146, Cl. 271-94.000.

Miyagawa, Tsutomu: *See—*
Tanaka, Motoaki; Miyagawa, Tsutomu; and Nakata, Takashi, 4,260,713, Cl. 526-215.000.

Miyaki, Takeo: *See—*
Kawaguchi, Hiroshi; Konishi, Masataka; Tsuno, Takashi; and Miyaki, Takeo, 4,260,683, Cl. 435-74.000.

Miyamoto, Takayoshi: *See—*
Ueda, Hiroshi; Miyamoto, Takayoshi; and Niwa, Masatake, 4,260,232, Cl. 354-152.000.

Miyasaka, Kenzi: *See—*
Motoki, Jinro; Ichikawa, Singo; Miyasaka, Kenzi; Uematsu, Hiroyuki; Murata, Mitsuhiro; Kawashima, Hideyuki; Inoue, Yuri; Ohkubo, Masae; and Ooka, Mituo, 4,261,048, Cl. 368-69.000.

Miyashita, Kiyoshi: *See—*
Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, 4,260,236, Cl. 355-3.0TR.

Miyashita, Osamu; and Akimoto, Hiroshi, to Takeda Chemical Industries, Ltd. Maytansinoids, pharmaceutical compositions thereof and methods of use thereof. 4,260,608, Cl. 424-248.540.

Miyata, Teruo, to Opticol Corporation. Collagen gel contact lens and method of preparation. 4,260,228, Cl. 351-160.00H.

Mizoguchi, Naoji; Takama, Eiichi; and Kaneko, Kazuo, to Toyo Ink Manufacturing Co., Ltd. Method for preparing a pigment composition. 4,260,424, Cl. 106-309.000.

Mizui, Katsuya: *See—*
Hosokawa, Masuo; Yokoyama, Tohei; Mizui, Katsuya; Yamashita, Haruhisa; and Doi, Kouichi, 4,260,478, Cl. 209-139.00A.

Mizzoni, Renat H., to Ciba-Geigy Corporation. 2-Aminoalkyl-5-pyridinols. 4,260,619, Cl. 424-263.000.

Mizzoni, Renat H.: *See—*
Finch, Neville; and Mizzoni, Renat H., 4,260,620, Cl. 424-266.000.

Mobay Chemical Corporation: *See—*
Limbert, Frank J., 4,260,537, Cl. 260-45.85B.

Mobil Oil Corporation: *See—*
Chen, Nai Y.; Haag, Werner O.; and Huang, Tracy J., 4,260,839, Cl. 585-257.000.
Chu, Chin-Chiun, 4,260,843, Cl. 585-467.000.
Holland, Robert E.; and Tabak, Samuel A., 4,260,841, Cl. 585-319.000.
Schwab, Frederick C., 4,260,694, Cl. 525-314.000.
Shim, Joosup, 4,260,501, Cl. 252-47.500.

Mochizuki, Daisuke: *See—*
Nagasaka, Takakazu; Fukuma, Yositaka; and Mochizuki, Daisuke, 4,261,036, Cl. 364-405.000.

Mode, Duane, to Champion International Corporation. Expandable paperboard cup and blank therefor. 4,260,099, Cl. 229-31.00R.

Mohn, Donald R.; and Mohn, Herbert D. Crop catching floor for harvesting machines. 4,259,833, Cl. 56-330.000.

Mohn, Herbert D.: *See—*
Mohn, Donald R.; and Mohn, Herbert D., 4,259,833, Cl. 56-330.000.

Moinard, Michel, to Societe Nationale Elf Aquitaine (Production). Connection-disconnection device between tubing and underwater wellhead for use with articulated production installations. 4,260,289, Cl. 405-169.000.

Moir, Ralph W., to United States of America, Energy. Mirror plasma apparatus. 4,260,455, Cl. 176-9.000.

Mole, Cecil J.: *See—*
Lugosi, Robert; Fechko, George J.; Male, Alan T.; Haller, Henry E., III; and Mole, Cecil J., 4,260,924, Cl. 310-213.000.

Moller, Hartmut, to Volkswagenwerk Aktiengesellschaft. Hydraulic regulator for generation of a driving speed-dependent pressure. 4,259,978, Cl. 137-54.000.

Mollere, John C., to Western Geophysical Co. of America. Quick coupler for seismic streamer sections. 4,260,211, Cl. 339-91.00B.

Mollica, Francesco. Shuttleless loom. 4,259,996, Cl. 139-437.000.

Molnar, Antal T.: *See—*
Hill, Garnett L.; Molnar, Antal T.; and Jehan, Henry I., Jr., 4,260,384, Cl. 434-16.000.

Momura, Toshihiro J., to Kabushiki Kaisha Universal. Target apparatus for pinball machines. 4,260,156, Cl. 273-127.00R.

Monacelli, Umberto. Nail-guiding member for a nail-driving machine. 4,260,093, Cl. 227-120.000.

Monitor Labs, Incorporated: *See—*
Wright, Steven A.; and Watts, Donald A., 4,260,890, Cl. 250-373.000.

Monsanto Company: *See—*
Joyce, Samuel F., III; Morgan, Albert W.; Touchette, Norman W.; and Vanderlinde, William, 4,260,542, Cl. 260-45.75R.
Munch, Ralph H.; and Thompson, Quentin E., 4,260,506, Cl. 252-78.100.

Moody, Dale R., to AMF Incorporated. Method and apparatus for making elastomer sheet material. 4,260,578, Cl. 264-40.700.

Mookherjee, Braja D.; Wilson, Richard A.; Schmitt, Frederick L.; and Vock, Manfred H., to International Flavors & Fragrances Inc. Normethyl jasmonate, process for producing same and uses of same in perfumes, colognes and perfumed articles. 4,260,512, Cl. 252-174.110.

Mookherjee, Braja D.: *See—*
Trenkle, Robert W.; Mookherjee, Braja D.; Hall, John B.; Kasper, Robin; Vock, Manfred H.; Schreck, Ronald; Granda, Edward J.; and Vinals, Joaquin F., 4,260,527, Cl. 252-522.00R.
Wilson, Richard A.; Mookherjee, Braja D.; Hall, John B.; and Stork, Gilbert, 4,260,830, Cl. 568-485.000.
Withycombe, Donald A.; Mookherjee, Braja D.; Vock, Manfred H.; and Vinals, Joaquin F., 4,260,641, Cl. 426-536.000.

Moore, Edwin G., to Abbott Laboratories. Glycosylated hemoglobin standards. 4,260,516, Cl. 252-408.000.

Moore, James H.: *See—*
Ore, Fernando; Ellis, John D.; and Moore, James H., 4,260,584, Cl. 422-189.000.

Moore, Joseph E., to Chevron Research Company. Fungicidal 2-substituted-3-oxa-3a lambda ^{4},4-dithia-6-chloro-1,5-diazapentalene. 4,260,624, Cl. 424-270.000.

Moran, Daniel B.; and Albright, Jay D., to American Cyanamid Company. Novel 6-phenyl and substituted 6-phenyl-1,2,4-triazolo[4,3-b]pyridazines. 4,260,755, Cl. 544-236.000.

Moran, Daniel B.; Dusza, John P.; and Albright, Jay D., to American Cyanamid Company. 6- And 8-heteroaryl-1,2,4-triazolo[4,3-b]pyridazines. 4,260,756, Cl. 544-236.000.

Moreira, Manuel E. Loom with stationary weft supply. 4,259,998, Cl. 139-450.000.

Moreno, Carlos, to Burroughs Wellcome Co. Hapten polysaccharide conjugate medicaments and method of use. 4,260,602, Cl. 424-180.000.

Morgan, Albert W.: *See—*
Joyce, Samuel F., III; Morgan, Albert W.; Touchette, Norman W.; and Vanderlinde, William, 4,260,542, Cl. 260-45.75R.

Morgan, C. Baird, Jr.; Alexy, Fred H.; and Geh, Robert E., to Vermont Tubbs, Inc.; and AMG Industries, Inc. Light weight, high traction snow shoe. 4,259,793, Cl. 36-125.000.

Mori, Hajime; Kohyama, Katsuhisa; Nakamura, Katsuhiko; and Sakata, Katsuyuki, to Mitsubishi Chemical Industries, Ltd. Aromatic polyester-polycarbonate. 4,260,731, Cl. 528-173.000.

Mori, Ko: *See—*
Taketani, Yutaka; Hayashi, Yuzuru; Kawaguchi, Takeyuki; Ono, Tomoyoshi; and Mori, Ko, 4,260,652, Cl. 427-245.000.

Morii, Takashi; and Kurata, Junichi, to Pioneer Electronic Corporation. Tonearm control system. 4,260,162, Cl. 369-33.000.

Morningstar, Leroy J.: *See—*
Zell, Dale R.; and Morningstar, Leroy J., 4,260,209, Cl. 339-14.00R.

Morrell, Dennis G.; and Sherman, Paul D., Jr., to Union Carbide Corporation. Hydroformylation process. 4,260,828, Cl. 568-454.000.

Morris, Edgar E.: *See—*
Weingart, Oscar; and Morris, Edgar E., 4,260,332, Cl. 416-226.000.

Morris, Leo R., to Dow Chemical Company, The. Preparation of (dichloromethyl) pyridines by reductive dechlorination. 4,260,766, Cl. 546-303.000.

Morrison, Robert W., Jr.; Mallory, William R.; and Styles, Virgil L., to Burroughs Wellcome Co. Pyrazolo (3,4-d) pyrimidines and methods of making. 4,260,758, Cl. 544-262.000.

Morrison, Ward D.; and Lumbra, Ralph C., to Joy Manufacturing Company. Midpoint centralizer. 4,260,029, Cl. 173-1.000.

Morse, Henry W.: *See—*
Shaffer, Robert W.; and Morse, Henry W., 4,260,402, Cl. 55-505.000.

Moss, Jack R.; Sugar, John W.; Riemer, Ronald A.; Frick, Charles E.; and Dillon, Ronald D., to Union Carbide Corporation. Biomonitor to safeguard water purification process from toxicants. 4,260,490, Cl. 210-620.000.

Motoda Denshi Kogyo Kabushiki Kaisha: *See—*
Motoda, Kenro; and Hasegawa, Kensuke, 4,260,319, Cl. 414-591.000.

Motoda, Kenro; and Hasegawa, Kensuke, to Motoda Denshi Kogyo Kabushiki Kaisha. End position control robot. 4,260,319, Cl. 414-591.000.

Motoki, Jinro; Ichikawa, Singo; Miyasaka, Kenzi; Uematsu, Hiroyuki; Murata, Mitsuhiro; Kawashima, Hideyuki; Inoue, Yuri; Ohkubo, Masae; and Ooka, Mituo, to Citizen Watch Company Limited. Analog quartz timepiece. 4,261,048, Cl. 368-69.000.

Motorola, Inc.: *See—*
Allgood, Robert N., 4,260,959, Cl. 331-111.000.
Dydyk, Michael, 4,260,962, Cl. 333-22.00R.

Mott, James D., to Hydril Company. Plug catcher tool. 4,260,021, Cl. 166-318.000.

Mouri, Masahide: *See*—
Yamada, Koichi; Nakazato, Kunio; Horinouchi, Kazuo; Hamano, Seiichi; and Mouri, Masahide, 4,260,524, Cl. 252-463.000.
Mousset, Noel, to Holophane S.A. Lighting device with rotatable reflector. 4,261,029, Cl. 362-283.000.
Moustacchi, Ethel: *See*—
Bisagni, Emile R.; Averbeck, Dietrich; Moustacchi, Ethel; and Zajdela, Francois, 4,260,630, Cl. 424-283.000.
Moyer, Richard L., to Ses, Incorporated. Electrode for photovoltaic cell. 4,260,429, Cl. 136-256.000.
Mucha, Michael E.: *See*—
Farrell, Beverly P.; and Mucha, Michael E., 4,260,646, Cl. 427-1.000.
Muellenberg, Ralph. Drum pulley. 4,260,387, Cl. 474-903.000.
Muhlig, Hans-Joachim: *See*—
Kruger, Horst; Berndt, Wilhelm; Schwartzkopff, Ursula; Reitter, Franz J.; Hopner, Theodor; and Muhlig, Hans-Joachim, 4,260,452, Cl. 162-23.000.
Mullen, James W., to VIDAC. Pin-feed label stock for drive transport systems and method of forming same. 4,260,656, Cl. 428-42.000.
Muller, Erich: *See*—
Roch, Josef; Muller, Erich; Narr, Berthold; Nickl, Josef; and Haarmann, Walter, 4,260,621, Cl. 424-267.000.
Muller, Fritz. Butterfly valve assembly and method of manufacturing the same. 4,259,980, Cl. 137-375.000.
Muller, Hanns: *See*—
Reischl, Artur; Muller, Hanns; and Wagner, Kuno, 4,260,530, Cl. 260-29.300.
Muller, Lutz: *See*—
Junge, Bodo; Krause, Hans P.; Muller, Lutz; and Puls, Walter, 4,260,622, Cl. 424-267.000.
Muller, Walter: *See*—
Rolf, Meinhard; Neeff, Rutger; and Muller, Walter, 4,260,540, Cl. 260-42.210.
Munch, Ralph H.; and Thompson, Quentin E., to Monsanto Company. Hydraulic pressure device utilizing biodegradable halogenated diphenyl methanes. 4,260,506, Cl. 252-78.100.
Munding, German: *See*—
Blindow, Friedrich-Karl; Decker, Jurgen; Kluibenschedl, Heinrich; Munding, German; Sowa, Armin; and Wagner, Harald, 4,260,194, Cl. 299-11.000.
Munnerlyn, Charles R.; Joba, Lawrence R.; and Shanker, Ramakrishna, to Coherent, Inc. Automated kinetic perimetry apparatus and method. 4,260,227, Cl. 351-24.000.
Muntjanoff, John R., to Caterpillar Tractor Co. Grapple head arrangement. 4,260,323, Cl. 414-731.000.
Murachi, Mikio: *See*—
Noda, Fumiyoshi; Murachi, Mikio; and Ueno, Hideaki, 4,260,585, Cl. 422-208.000.
Murakami, Hisamichi: *See*—
Yamaguchi, Akihiro; Kobayashi, Tadashi; Yamaguchi, Keizaburo; Osawa, Kisuke; Murakami, Hisamichi; Yamato, Noboru; and Hasegawa, Akira, 4,260,179, Cl. 282-27.500.
Murakami, Katsumi: *See*—
Honma, Toshio; Furuichi, Katsushi; Murakami, Katsumi; and Tomosada, Masahiro, 4,260,241, Cl. 355-14.00R.
Muramatsu, Kozo; and Samizo, Kuniko, to Mitsubishi Chemical Industries, Ltd. Method and apparatus for the measurement of glucose content. 4,260,680, Cl. 435-14.000.
Murata, Mitsuhiro: *See*—
Motoki, Jinro; Ichikawa, Singo; Miyasaka, Kenzi; Uematsu, Hiroyuki; Murata, Mitsuhiro; Kawashima, Hideyuki; Inoue, Yuri; Ohkubo, Masae; and Oooka, Mituo, 4,261,048, Cl. 368-69.000.
Murata, Tomoji; Shibazaki, Kenji; Arai, Kenichi; and Kitagawa, Tsuneo, to Minolta Camera Kabushiki Kaisha. Electrophotographic copying apparatus equipped with copying coverage indication device. 4,260,248, Cl. 355-60.000.
Murfree, James A.: *See*—
Martignoni, Pasquale; Murfree, James A.; Nappier, Henry A.; Ayers, Orval E.; and Chew, William M., 4,260,653, Cl. 427-247.000.
Muscariello, Tullio, to Save-O-Seal. Continuous bag sealing machine. 4,260,447, Cl. 156-494.000.
Myatt, Hal L., to Ciba-Geigy Corporation. Process for the manufacture of cyanooximinonitriles. 4,260,555, Cl. 260-465.00E.
Myers, John R.: *See*—
Rettig, Vernon E.; and Myers, John R., 4,260,172, Cl. 280-411.00A.
Myers, Robert E.: *See*—
Frohbach, Hugh F.; Myers, Robert E.; Peppers, Norman A.; Siwecki, Thomas L.; Schaefer, Louis F.; and Macovski, Albert, 4,261,007, Cl. 358-5.000.
Myers, Ronald V., to Smiths Industries Limited. Fluid-gauging systems. 4,259,865, Cl. 73-304.00C.
Naegeli, Peter: *See*—
Kaiser, Roman; and Naegeli, Peter, 4,260,526, Cl. 252-522.00R.
Nagano, Masashi; and Isobe, Mitsuhide, to Shimano Industrial Company Limited. Derailleur. 4,259,873, Cl. 474-82.000.
Nagaoka, Yoshitomi: *See*—
Tomimoto, Tetsuo; Nagaoka, Yoshitomi; and Sasaki, Reiichi, 4,261,009, Cl. 358-27.000.
Nagasaka, Takakazu; Fukuma, Yositaka; and Mochizuki, Daisuke, to Sharp Kabushiki Kaisha. Receipt printing timing controllable electronic cash register. 4,261,036, Cl. 364-405.000.
Nagase, Takeshi: *See*—
Terai, Kazuo; and Nagase, Takeshi, 4,260,170, Cl. 280-276.000.
Nagata, Kenzo: *See*—
Horie, Yoshihiro; Nagata, Kenzo; and Hatano, Manabu, 4,260,904, Cl. 307-113.000.
Nagati, Rashed N., to Pennsylvania Engineering Corporation. Metallurgical vessel. 4,260,140, Cl. 266-246.000.
Nagati, Rashed N., to Pennsylvania Engineering Corporation. Centerplate wear liners. 4,260,141, Cl. 266-287.000.
Nagelkerke, Petrus J. J., to U.S. Philips Corporation. Handle for holding, heating and manipulating successively applied hair rollers. 4,260,871, Cl. 219-222.000.
Nagy, Gabor: *See*—
Hermecz, Istvan; Meszaros, Zoltan; Breining, Tibor; Virag, Sandor; Vasvari nee Debreczi, Lelle; Horvath, Agnes; Nagy, Gabor; Mandi, Attila; Szuts, Tamas; Bitteer, Istvan; and Sebestyen, Gyula, 4,260,612, Cl. 424-251.000.
Nahas, Nicholas C.: *See*—
Brown, Leo D.; Eakman, James M.; Nahas, Nicholas C.; and Clavenna, LeRoy R., 4,260,421, Cl. 106-103.000.
Nakagawa, Toshio W.; and Rudy, Thomas P., to United Technologies Corporation. Stabilizers for solid propellant binders. 4,260,437, Cl. 149-19.900.
Nakai, Kiyoshi: *See*—
Matsushima, Shunsuke; Hata, Kazuhiko; Mashita, Kentaro; Kanagawa, Shuichi; Nakao, Shinji; Nakai, Kiyoshi; and Kamio, Kunimasa, 4,260,831, Cl. 568-719.000.
Nakai, Masanori: *See*—
Tokumaru, Yukuya; and Nakai, Masanori, 4,260,906, Cl. 307-477.000.
Nakamura, Katsuhiko: *See*—
Mori, Hajime; Kohyama, Katsuhisa; Nakamura, Katsuhiko; and Sakata, Katsuyuki, 4,260,731, Cl. 528-173.000.
Nakamura, Kiichi; and Iwata, Takashi, to TDK Electronics Co., Inc. Fixed microwave attenuator having mounting hole passing through alumina porcelain substrate. 4,260,965, Cl. 333-81.00A.
Nakamura, Masazo; Sudo, Eiichi; and Urata, Kiyoshi. Yoke for use in concrete work. 4,260,127, Cl. 249-207.000.
Nakamura, Tsutomu; and Umehara, Teruo, to Hitachi, Ltd.; and Hitachi Metals, Ltd. Multi-pole permanent magnet rotor. 4,260,920, Cl. 310-156.000.
Nakanishi, Kiyoshi; Ito, Kazuhiko; Okumura, Takeshi; Iezuka, Isamu; and Yasukawa, Masao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Combustion chamber of an internal combustion engine. 4,259,933, Cl. 123-307.000.
Nakao, Hideyuki, to Kabushiki Kaisha Daini Seikosha. Date driving mechanism of watch. 4,261,047, Cl. 368-38.000.
Nakao, Shinji: *See*—
Matsushima, Shunsuke; Hata, Kazuhiko; Mashita, Kentaro; Kanagawa, Shuichi; Nakao, Shinji; Nakai, Kiyoshi; and Kamio, Kunimasa, 4,260,831, Cl. 568-719.000.
Nakata, Takashi: *See*—
Tanaka, Motoaki; Miyagawa, Tsutomu; and Nakata, Takashi, 4,260,713, Cl. 526-215.000.
Nakatsuka, Yuji: *See*—
Ogata, Masami; and Nakatsuka, Yuji, 4,259,771, Cl. 29-33.00F.
Nakazato, Kunio: *See*—
Yamada, Koichi; Nakazato, Kunio; Horinouchi, Kazuo; Hamano, Seiichi; and Mouri, Masahide, 4,260,524, Cl. 252-463.000.
Nakazawa, Toru: *See*—
Kozuka, Nobuhiko; and Nakazawa, Toru, 4,260,238, Cl. 355-3.0TR.
Nalco Chemical Company: *See*—
Slanker, Steven R., 4,260,502, Cl. 252-49.500.
Naphtachimie: *See*—
Tucoulat, Marcel J.; and Lonchampt, Jacques, 4,260,504, Cl. 252-73.000.
Naphthachimie: *See*—
Durand, Daniel C.; and Mangin, Pierre M. F., 4,260,709, Cl. 526-137.000.
Nappier, Henry A.: *See*—
Martignoni, Pasquale; Murfree, James A.; Nappier, Henry A.; Ayers, Orval E.; and Chew, William M., 4,260,653, Cl. 427-247.000.
Narr, Berthold: *See*—
Roch, Josef; Muller, Erich; Narr, Berthold; Nickl, Josef; and Haarmann, Walter, 4,260,621, Cl. 424-267.000.
Nash, John E., to Syntex (U.S.A.) Inc. Vibratory device with fluid transport means. 4,260,380, Cl. 433-119.000.
National Institute of Metallurgy: *See*—
Corrans, Ian J., 4,260,477, Cl. 209-38.000.
National Petro Chemicals Corp.: *See*—
Rekers, Louis J.; Katzen, Stanley J.; and Krekeler, Jerome H., 4,260,706, Cl. 526-100.000.
National Research Development Corporation: *See*—
Haigh, David G.; and Saraga, Wolja, 4,260,968, Cl. 333-214.000.
Johns, Allan T.; and Martin, Michael A., 4,261,038, Cl. 364-482.000.
Rawcliffe, Gordon H., 4,260,923, Cl. 310-184.000.
National Starch and Chemical Corporation: *See*—
Tessler, Martin M., 4,260,738, Cl. 536-49.000.
Neale, Douglas L.: *See*—
Manizza, Guelfo A.; and Neale, Douglas L., 4,260,098, Cl. 229-31.00R.
Nederman, Bill P. P. Device for reception or delivery of gases. 4,259,897, Cl. 98-40.0DL.
Neeff, Rutger: *See*—
Rolf, Meinhard; Neeff, Rutger; and Muller, Walter, 4,260,540, Cl. 260-42.210.

Neeley, William E.; and Yee, Hugh Y. Flow cell. 4,260,257, Cl. 356-246.000.
Nelle, Friedrich, to International Standard Electric Corporation. Deflection unit for a cathode-ray tube. 4,260,974, Cl. 335-213.000.
Nels, Terry E., to General Motors Corporation. Friction disc and method of making same. 4,260,047, Cl. 192-70.140.
Nelson, Wayne E.: *See*—
Kelley, Lawrence G.; Nelson, Wayne E.; and Quist, Clark J., 4,260,334, Cl. 417-52.000.
Nelson, Wayne F.; and Weiss, Paul A., to Dow Chemical Company, The. Cementing collar and method of operation. 4,260,017, Cl. 166-154.000.
Nelson, Wayne F.; and Gurley, Derrel G., to Dow Chemical Company, The. Method and tool for controlling fluid flow from a tubing string into a low pressure earth formation. 4,260,020, Cl. 166-305.00R.
Neotec Corporation: *See*—
Webster, Donald R., 4,260,262, Cl. 356-418.000.
Neu, William F., to Magnex Corporation. Method of fabrication for thin film magnetic transducers. 4,260,450, Cl. 156-656.000.
Neumann, Harry J.: *See*—
Schultz, William G.; Neumann, Harry J.; and Schade, John E., 4,260,638, Cl. 426-287.000.
Neumann, Leopold, to Siemens Aktiengesellschaft. Optimum dose tomography scanning system. 4,260,894, Cl. 250-445.00T.
Neuray, Dieter: *See*—
Binsack, Rudolf; Rempel, Dieter; Korber, Helmut; and Neuray, Dieter, 4,260,690, Cl. 525-64.000.
New Japan Radio Company Ltd.: *See*—
Yanagisawa, Wasuke; and Watanabe, Hiroshi, 4,260,988, Cl. 343-700.0MS.
Newman, Albert L.: *See*—
Herron, William L.; and Newman, Albert L., 4,260,207, Cl. 312-208.000.
Newman, John M. W. Boring tools. 4,260,303, Cl. 408-168.000.
Nezames, Theodore H.: *See*—
Steddum, Riddle E.; Nezames, Theodore H.; Smith, Terrence M.; and Crager, Bruce L., 4,260,292, Cl. 405-217.000.
Nicholson, John G.; and Campbell, Ian P., to Zapata Industries, Inc. Bottle cap inspecting machine. 4,260,483, Cl. 209-539.000.
Nickl, Josef: *See*—
Roch, Josef; Muller, Erich; Narr, Berthold; Nickl, Josef; and Haarmann, Walter, 4,260,621, Cl. 424-267.000.
Nicolaou, Kyriacos C.; Magolda, Ronald L.; and Claremon, David A., to Research Corporation. Carbocyclic thromboxane A_2 analogues. 4,260,806, Cl. 560-118.000.
Niederprum, Hans: *See*—
de Montigny, Armand; and Niederprum, Hans, 4,260,715, Cl. 556-453.000.
Niihama, Koichi; and Ishizuka, Yoshitada, to Delphi Company Ltd. DIP Rotary switch. 4,260,860, Cl. 200-6.00R.
Nikku Industry Co., Ltd.: *See*—
Kawasaki, Takuya, 4,260,399, Cl. 55-74.000.
Nippon Kogaku K.K.: *See*—
Fukuhara, Toru, 4,260,233, Cl. 354-274.000.
Hamanishi, Yoshinari, 4,260,223, Cl. 350-465.000.
Nippon Kokan Kabushiki Kaisha: *See*—
Suzuki, Gyoichi; Ando, Ryo; Koyama, Tatsuo; Kubodera, Shoji; and Kondo, Renichi, 4,260,414, Cl. 75-60.000.
Nippon Oil and Fats Co., Ltd.: *See*—
Komai, Takeshi; and Matsushima, Masaru, 4,260,692, Cl. 525-273.000.
Nippon Soken, Inc.: *See*—
Yasuda, Eturo; Segawa, Yoshihiro; and Ohta, Minoru, 4,260,978, Cl. 338-34.000.
Nippon Tsushin Kogyo KK: *See*—
Shinoi, Tsuyoshi; and Oshima, Setsuo, 4,260,857, Cl. 179-99.00R.
Nippondenso Co., Ltd.: *See*—
Kawamura, Michio; Kato, Takeshi; Ohira, Kouji; Nishimura, Katsusuke; and Mitsui, Kazuaki, 4,260,878, Cl. 235-92.0AC.
Nishihira, Keigo: *See*—
Umemura, Sumio; Matsui, Kanenobu; Ikeda, Yoshinari; Masunaga, Katsuro; Kadota, Takumi; Fujii, Kozo; Nishihira, Keigo; and Matsuda, Masaoki, 4,260,810, Cl. 560-204.000.
Nishikawa, Masaji, to Olympus Optical Co., Ltd. Electrophotographic apparatus. 4,260,237, Cl. 355-3.0FU.
Nishikawa, Masaji, to Olympus Optical Co., Ltd. Electrophotographic apparatus for forming a duplicated image at any desired position on a record carrier. 4,260,242, Cl. 355-14.0TR.
Nishikawa, Masaji: *See*—
Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, 4,260,236, Cl. 355-3.0TR.
Nishimiya, Toru, to Tomy Kogyo Co., Inc. Game incorporating an inclined ramp in a ball launching mechanism. 4,260,153, Cl. 273-89.000.
Nishimura, Katsusuke: *See*—
Kawamura, Michio; Kato, Takeshi; Ohira, Kouji; Nishimura, Katsusuke; and Mitsui, Kazuaki, 4,260,878, Cl. 235-92.0AC.
Nishimura, Kotaro: *See*—
Masuhara, Toshiaki; Minato, Osamu; Sakai, Yoshio; Sasaki, Toshio; Kubo, Masaharu; Nishimura, Kotaro; and Yasui, Tokumasa, 4,261,004, Cl. 357-51.000.
Nishiyama, Hissai, to Yoshida Kogyo K. K. Harness for looms. 4,259,995, Cl. 139-92.000.
Nishiyodo Air Conditioner Co., Ltd.: *See*—
Ogata, Masami; and Nakatsuka, Yuji, 4,259,771, Cl. 29-33.00F.
Nissan Motor Company, Limited: *See*—
Hayashi, Kazuo; and Takahashi, Fujio, 4,259,896, Cl. 98-2.030.
Nissen, Axel: *See*—
Horner, Michael; Nissen, Axel; Laurer, Peter R.; Irgang, Matthias; and Pasedach, Heinrich, 4,260,829, Cl. 568-462.000.
Niu, Gregory C. C.: *See*—
Keogh, Philip L.; Kunzler, Jay F.; and Niu, Gregory C. C., 4,260,725, Cl. 526-279.000.
Niwa, Masatake: *See*—
Ueda, Hiroshi; Miyamoto, Takayoshi; and Niwa, Masatake, 4,260,232, Cl. 354-152.000.
Noble, Charles H. Apparatus for centrifugal casting. 4,260,009, Cl. 164-270.000.
Noda, Fumiyoshi; Murachi, Mikio; and Ueno, Hideaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Apparatus for manufacture of low-soda alumina granules. 4,260,585, Cl. 422-208.000.
Nold, Richard P., to Real-Pack Entwicklungs-und Verpackungstechnik GmbH. Container. 4,260,097, Cl. 229-16.00R.
Nomura, Hiroshi, to Diesel Kiki Company, Ltd. Swash plate compressor. 4,260,337, Cl. 417-269.000.
Norbeck, Dean K., to Borg-Warner Corporation. Logic control system for inverter-driven motor. 4,259,845, Cl. 62-209.000.
Nordson Corporation: *See*—
Collin, Everett E., 4,260,116, Cl. 242-55.000.
Norlin Industries, Inc.: *See*—
Gross, Glenn M., 4,259,888, Cl. 84-1.220.
Northrop Corporation: *See*—
Robinson, Guner S.; and Reis, James J., 4,261,043, Cl. 364-725.000.
Northwood, Sadie M.: *See*—
Gerdes, Heinrich D., 4,259,941, Cl. 126-120.000.
NSK-Warner K.K.: *See*—
Ikesue, Haruyuki, 4,260,118, Cl. 242-107.40A.
Nugent, Richard M.: *See*—
Bosso, Joseph F.; Nugent, Richard M.; and Plasynski, Joseph E., 4,260,720, Cl. 528-109.000.
Nyegaard & Co. A/S: *See*—
Reichelt, Karl-Ludwig; and Trygstad, Olav E., 4,260,601, Cl. 424-177.000.
Nyrop, Per: *See*—
Lewis, Kenneth D.; Charlton, Andrew P.; Nyrop, Per; and Merediz, Tristan O., 4,260,480, Cl. 209-211.000.
Nyvall, Ake K.: *See*—
Johansson, Bengt A.; Nyvall, Ake K.; and Jonsson, Frank G., 4,260,433, Cl. 148-9.500.
Oakes, Harry S. Magnetic optical toy. 4,259,808, Cl. 46-240.000.
Occidental Petroleum Corporation: *See*—
Ore, Fernando; Ellis, John D.; and Moore, James H., 4,260,584, Cl. 422-189.000.
Occidental Research Corporation: *See*—
Bauer, Hans F., 4,260,473, Cl. 208-14.000.
Shafer, John L., 4,260,192, Cl. 299-2.000.
Oda, Norimasa: *See*—
Maki, Yoshiki; Idemoto, Atsushi; and Oda, Norimasa, 4,260,264, Cl. 366-75.000.
O'Donnell, Albert E.; and Gum, Clarence; R., to Shell Oil Company. Nickel complexes in diol solvents and their use as oligomerization catalyst precursors. 4,260,844, Cl. 585-523.000.
Odstrchel, Gerald: *See*—
Lepp, Cyrus A.; and Odstrchel, Gerald, 4,260,678, Cl. 435-7.000.
O'ffill, Joseph M., to Shale Oil Science & Systems, Inc. Modular heat exchange apparatus. 4,260,371, Cl. 432-82.000.
Offshore Company, The: *See*—
Steddum, Riddle E.; Nezames, Theodore H.; Smith, Terrence M.; and Crager, Bruce L., 4,260,292, Cl. 405-217.000.
Offterdinger, Hans-Georg: *See*—
Frotschner, Eberhard; and Offterdinger, Hans-Georg, 4,260,330, Cl. 416-180.000.
Ogasawara, Takaaki: *See*—
Sekino, Teruyoshi; and Ogasawara, Takaaki, 4,260,870, Cl. 219-124.330.
Ogata, Masami; and Nakatsuka, Yuji, to Nishiyodo Air Conditioner Co., Ltd. Apparatus for producing heat transfer tube. 4,259,771, Cl. 29-33.00F.
Ogiso, Akira: *See*—
Mishima, Hiroshi; Ogiso, Akira; and Kobayashi, Shinsaku, 4,260,551, Cl. 260-410.600.
Ogiue, Katsumi: *See*—
Itoh, Kazuo; Ogiue, Katsumi; and Hayasaka, Akio, 4,260,430, Cl. 148-1.500.
Ogle, Robert W., to IMS Limited. Certi-seal. 4,259,956, Cl. 128-272.000.
Ohira, Kouji: *See*—
Kawamura, Michio; Kato, Takeshi; Ohira, Kouji; Nishimura, Katsusuke; and Mitsui, Kazuaki, 4,260,878, Cl. 235-92.0AC.
Ohkubo, Masae: *See*—
Motoki, Jinro; Ichikawa, Singo; Miyasaka, Kenzi; Uematsu, Hiroyuki; Murata, Mitsuhiro; Kawashima, Hideyuki; Inoue, Yuri; Ohkubo, Masae; and Ooka, Mituo, 4,261,048, Cl. 368-69.000.
Ohlinger, Rainer; Falkenstein, Georg; Wurmb, Rolf; and Marx, Matthias, to BASF Aktiengesellschaft. Storage-stable, liquid carbodiimide modified polyisocyanates and process for their manufacture. 4,260,554, Cl. 260-453.0SP.
Ohnishi, Makoto; and Shirasu, Hirotoshi, to Hitachi, Ltd. Time-division-multiplexed exchanger. 4,261,051, Cl. 370-58.000.

Ohta, Kazuhiko: *See*—
Okazaki, Hisayoshi; Kanamaru, Tsuneo; and Ohta, Kazuhiko, 4,260,599, Cl. 424-122.000.
Ohta, Masafumi: *See*—
Sasaki, Masaomi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Tsutsui, Kyoji, 4,260,672, Cl. 430-72.000.
Ohta, Minoru: *See*—
Yasuda, Eturo; Segawa, Yoshihiro; and Ohta, Minoru, 4,260,978, Cl. 338-34.000.
Ohtani, Masami: *See*—
Watanabe, Risaburo; Ohtani, Masami; and Hashizume, Naoki, 4,260,343, Cl. 418-269.000.
Oiles Industry Co. Ltd.: *See*—
Tada, Hiroshi, 4,259,759, Cl. 14-16.100.
Okado, Chihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Method and apparatus for controlling electric valves in AC power supply. 4,260,948, Cl. 323-241.000.
Okamoto, Yosinori: *See*—
Fukuda, Kotaro; Okamoto, Yosinori; Shimada, Masakatsu; Kato, Toshiaki; Tabuchi, Katsuhiko; Shimura, Makoto; and Fujiwara, Takashi, 4,259,965, Cl. 128-640.000.
Okano, Hiroshi: *See*—
Aida, Toshiyuki; Taguchi, Sadanori; Yuito, Isamu; Kawabe, Ushio; Yamamoto, Shigehiko; Honda, Yukio; Shibata, Norio; and Okano, Hiroshi, 4,260,665, Cl. 428-633.000.
Okazaki, Hisayoshi; Kanamaru, Tsuneo; and Ohta, Kazuhiko, to Takeda Chemical Industries, Ltd. Antifibrotic substance P-1894B. 4,260,599, Cl. 424-122.000.
Okumura, Takeshi: *See*—
Nakanishi, Kiyoshi; Ito, Kazuhiko; Okumura, Takeshi; Iezuka, Isamu; and Yasukawa, Masao, 4,259,933, Cl. 123-307.000.
Olin Corporation: *See*—
Dotson, Ronald L.; and Carr, Edward P., 4,260,494, Cl. 210-721.000.
Milnes, Frank J.; Bucko, Robert J.; and Gavin, David F., 4,260,505, Cl. 252-77.000.
Turley, Richard J.; and MacFarland, David R., 4,260,728, Cl. 528-57.000.
Oliver, Raymond: *See*—
Anderton, Nicholas W. R.; Ford, Leslie J.; Kirk, Frank A.; and Oliver, Raymond, 4,260,734, Cl. 528-272.000.
Oliver, Raymond E.; and Payne, John B., to Matthey Rustenburg Refiners (Pty.) Limited. Refining of metals. 4,260,139, Cl. 266-154.000.
Oliver, Robert G.: *See*—
Houle, Philip J.; and Oliver, Robert G., 4,260,147, Cl. 271-182.000.
Olsen, Gregory H.; and Cafiero, Alfred V., to RCA Corporation. Single-crystal hexaborides and method of preparation. 4,260,525, Cl. 252-521.000.
Olson, Gary L.: *See*—
Berger, Leo; and Olson, Gary L., 4,260,762, Cl. 546-84.000.
Olympia Werke AG: *See*—
Pieper, Reinhold, 4,260,240, Cl. 355-3.0CH.
Olympus Optical Co., Ltd.: *See*—
Kawarada, Osamu, 4,260,231, Cl. 354-128.000.
Kozawa, Tokujiro, 4,260,222, Cl. 350-164.000.
Nishikawa, Masaji, 4,260,237, Cl. 355-3.0FU.
Nishikawa, Masaji, 4,260,242, Cl. 355-14.0TR.
Sakurada, Masahiko, 4,260,581, Cl. 422-65.000.
Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, 4,260,236, Cl. 355-3.0TR.
O'Mahony, Gerard. Pulsating signal generator for the production of polyphase voltages of interference. 4,260,944, Cl. 322-48.000.
O'Melia, Lawrence: *See*—
Lalikos, James M.; Gazda, Chester T.; and O'Melia, Lawrence, 4,259,989, Cl. 138-109.000.
Onder, Kemal B.: *See*—
Farrissey, William J., Jr.; Goldwasser, David J.; and Onder, Kemal B., 4,260,718, Cl. 528-60.000.
O'Neil, Robert J. Self stabilizing intra-oral saliva evacuator. 4,260,378, Cl. 433-93.000.
O'Neill, Michael S.: *See*—
Loyd, Morris S.; and O'Neill, Michael S., 4,260,657, Cl. 428-113.000.
Ono, Tomoyoshi: *See*—
Taketani, Yutaka; Hayashi, Yuzuru; Kawaguchi, Takeyuki; Ono, Tomoyoshi; and Mori, Ko, 4,260,652, Cl. 427-245.000.
Ono, Tsuneyoshi; and Ikegami, Toshimasa, to Kabushiki Kaisha Suwa Seikosha. Timepiece. 4,261,046, Cl. 368-35.000.
Onoda, Seiichi; Yamada, Shoji; Minai, Yasuo; Maeda, Minoru; Kita, Shin; and Tanaka, Mitsuo, to Hitachi, Ltd. Optical measurement system. 4,260,883, Cl. 250-226.000.
Onodera, Hirosuke. Flexible conveyor belt. 4,260,053, Cl. 198-812.000.
Ooka, Mituo: *See*—
Motoki, Jinro; Ichikawa, Singo; Miyasaka, Kenzi; Uematsu, Hiroyuki; Murata, Mitsuhiro; Kawashima, Hideyuki; Inoue, Yuri; Ohkubo, Masae; and Ooka, Mituo, 4,261,048, Cl. 368-69.000.
Oppenlaender, Knut: *See*—
Perner, Johannes; Stork, Karl; and Oppenlaender, Knut, 4,260,724, Cl. 526-229.000.
Opticol Corporation: *See*—
Miyata, Teruo, 4,260,228, Cl. 351-160.00H.
Orcutt, John W., to Texas Instruments Incorporated. Condition responsive apparatus having an improved motion transfer member. 4,260,862, Cl. 200-81.00R.
Ore, Fernando; Ellis, John D.; and Moore, James H., to Occidental Petroleum Corporation. Apparatus useful for wet process phosphoric acid production. 4,260,584, Cl. 422-189.000.
Organisation Europeenne de Recherches Spatiales: *See*—
Tamburini, Primo, 4,260,015, Cl. 165-110.000.
Orter, Ralph H. Cigarette smoking device. 4,259,971, Cl. 131-178.000.
Osawa, Kisuke: *See*—
Yamaguchi, Akihiro; Kobayashi, Tadashi; Yamaguchi, Keizaburo; Osawa, Kisuke; Murakami, Hisamichi; Yamato, Noboru; and Hasegawa, Akira, 4,260,179, Cl. 282-27.500.
Osborn, William E.; and Symens, Ronald E., to Firestone Tire & Rubber Company, The. Defect marker method and apparatus for use with tire inspection machines. 4,260,889, Cl. 250-358.00T.
Oshima, Setsuo: *See*—
Shinoi, Tsuyoshi; and Oshima, Setsuo, 4,260,857, Cl. 179-99.00R.
Osman, Maged A., to BBC Brown, Boveri & Company, Limited. Display device. 4,260,987, Cl. 340-756.000.
Outboard Marine Corporation: *See*—
Cavil, David T.; and Krueger, William R., 4,260,937, Cl. 318-358.000.
Overman, Kenneth. Method for pelletizing wood particulate matter. 4,260,573, Cl. 264-68.000.
Owen, Kenneth R., to Keeler Corporation. Method of making a self-tapping screw. 4,259,758, Cl. 10-10.00R.
Owens-Corning Fiberglas Corporation: *See*—
Foucht, Millard E., 4,260,514, Cl. 252-182.000.
Owens, Roland G. Vacuum motor. 4,259,895, Cl. 92-78.000.
Oxford, David B.: *See*—
Closson, Thomas A.; Oxford, David B.; Schenck, Stephen R.; and Seitchik, Jerold A., 4,261,044, Cl. 365-8.000.
Paaren, Herbert E.: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Paaren, Herbert E.; and Hamer, David E., 4,260,549, Cl. 260-397.200.
Pace, Dan R. Irish moss harvester. 4,259,828, Cl. 56-9.000.
Pace, Paul D. Moveable top stretcher. 4,259,756, Cl. 5-81.00B.
Pacific Scientific Company: *See*—
Rose, Dennis H.; and Davidson, Val E., 4,260,258, Cl. 356-335.000.
Pacis, Arnold F.; and Youngdale, Ralph A., to Chrysler Corporation. Wheel suspension strut. 4,260,176, Cl. 280-668.000.
Pako Corporation: *See*—
Diesch, Robert E.; and Eutenuer, Charles L., 4,260,148, Cl. 271-219.000.
Laska, Ronald C.; and Pone, Janis, 4,260,244, Cl. 355-35.000.
Paradis, Roland C.: *See*—
Leka, George T.; and Paradis, Roland C., 4,260,342, Cl. 417-458.000.
Parker, Dane K.; and Kline, Richard H., to Goodyear Tire & Rubber Company, The. Alkylation of 2,6-di-tert-alkylphenols with alkanediols. 4,260,832, Cl. 568-784.000.
Parker, Ernest G., to International Telephone and Telegraph Corporation. Antenna pattern synthesis and shaping. 4,260,994, Cl. 343-854.000.
Parrish, Clyde F.: *See*—
Douda, Bernard E.; Parrish, Clyde F.; and Short, James E., Jr., 4,260,509, Cl. 252-171.000.
Pasedach, Heinrich: *See*—
Horner, Michael; Nissen, Axel; Laurer, Peter R.; Irgang, Matthias; and Pasedach, Heinrich, 4,260,829, Cl. 568-462.000.
Paull, Seymour; and Marino, Michael J. Electronic thermometer. 4,260,058, Cl. 206-443.000.
Payne, John B.: *See*—
Oliver, Raymond E.; and Payne, John B., 4,260,139, Cl. 266-154.000.
Pearse, Richard H., Jr., to Trane Company, The. Stepped capacity constant volume building air conditioning system. 4,259,847, Cl. 62-93.000.
Pearson, Edward J.: *See*—
Thompson, David T.; Bird, Alfred J.; and Pearson, Edward J., 4,260,817, Cl. 562-487.000.
Pedley, Dennis W.: *See*—
Chapman, Lloyd E.; and Pedley, Dennis W., 4,261,027, Cl. 362-255.000.
Peers-Trevarton, Charles A., to Cordis Corporation. Sealing system for cardiac pacer lead connector. 4,259,962, Cl. 128-419.00P.
Pegel, Karl H.; and Walker, Hans. Sterol glycoside with activity as prostaglandin synthetase inhibitor. 4,260,603, Cl. 424-182.000.
Pemberton, Eugene B.; and Fahl, Richard L., to Dover Corporation. Valve construction. 4,259,984, Cl. 137-533.310.
Penniman, Scott R., to REP Industries, Inc. Binder with magazine storage and hand tool. 4,260,274, Cl. 402-80.00R.
Pennsylvania Engineering Corporation: *See*—
Nagati, Rashed N., 4,260,140, Cl. 266-246.000.
Nagati, Rashed N., 4,260,141, Cl. 266-287.000.
Peperstraete, Jan; and Breugelmans, Walter, to Repro S.V. Brush type toner deposition device. 4,260,239, Cl. 355-3.0DD.
Pepper, John A.: *See*—
Drew, John F.; Pepper, John A.; Shuttlewood, Victor C.; and West, Keith D., 4,260,752, Cl. 544-190.000.
Peppers, Norman A.: *See*—
Frohbach, Hugh F.; Myers, Robert E.; Peppers, Norman A.; Siwecki, Thomas L.; Schaefer, Louis F.; and Macovski, Albert, 4,261,007, Cl. 358-5.000.
Peppler, Michael S.: *See*—
Ritchie, Leon T.; and Peppler, Michael S., 4,260,212, Cl. 339-97.00R.

Periou, Pierre; and Rampignon, Marc, to Compagnie Industrielle de Mecanismes. Device for closing a slidable element such as a sliding roof of an automobile vehicle. 4,260,189, Cl. 296-223.000.

Perkin-Elmer Corporation, The: *See—*
Dension, Dean R.; and Hartsough, Larry D., 4,260,649, Cl. 427-53.100.
Leka, George T.; and Paradis, Roland C., 4,260,342, Cl. 417-458.000.

Perner, Johannes; Stork, Karl; and Oppenlaender, Knut, to BASF Aktiengesellschaft. Preparation of polymaleic acids from maleic anhydride in the presence of acetic anhydride and of hydrogen peroxide. 4,260,724, Cl. 526-229.000.

Peroutky, Donald C., to General Electric Company. Split stackable printing blades for matrix printer head. 4,260,269, Cl. 400-121.000.

Perrin, Jack L.; and Tucker, Council A., to Towlsaver, Inc. Dual roll towel dispenser. 4,260,117, Cl. 242-55.300.

Persson, Mats A.; and Lovdin, Arne L., to Telefonaktiebolaget L M Ericsson. Integrated switching and transmission network. 4,261,052, Cl. 370-59.000.

Perzley, William: *See—*
Engelberger, Joseph F.; Lindbom, Torsten H.; Dunne, Maurice J.; Perzley, William; Roberts, Wilbur N.; and Gardner, Horace L., 4,260,940, Cl. 318-562.000.
Engelberger, Joseph F.; Lindbom, Torsten H.; Dunne, Maurice J.; Perzley, William; Roberts, Wilbur N.; and Gardner, Horace L., 4,260,941, Cl. 318-562.000.

Petersen, Egon N., to Dynamit Nobel Aktiengesellschaft. Chloromethylbenzoic acid esters of phenols. 4,260,803, Cl. 560-108.000.

Peterson, Glen. Electronic status determining label. 4,260,881, Cl. 235-493.000.

Peterson, John A. Floating dock structure and method for fabricating the same. 4,260,293, Cl. 405-219.000.

Petrizio, Cesare J.: *See—*
Isham, Robert H.; and Petrizio, Cesare J., 4,260,960, Cl. 331-111.000.

Pettersson, John P. Arrangement for guiding casting forms. 4,260,344, Cl. 425-63.000.

Pettersson, John P. Arrangement for casting concrete walls. 4,260,345, Cl. 425-65.000.

Pfeiffer, Hans F.: *See—*
Asbeck, Adolf; Pfeiffer, Hans F.; Plapper, Juergen; and Schmid, Rolf, 4,260,686, Cl. 435-265.000.

Pfeiffer, Loren N.: *See—*
Kovacs, Terrence; Mills, Allen P., Jr.; and Pfeiffer, Loren N., 4,260,892, Cl. 250-388.000.

Pfister, Theodor, to Bayer Aktiengesellschaft. Process for the preparation of aromatic aminohydroxy compounds. 4,260,558, Cl. 260-507.00R.

Pfizer Inc.: *See—*
Barth, Wayne E., 4,260,598, Cl. 424-114.000.
Carrington, Roy; and Hall, Michael C., 4,260,740, Cl. 536-63.000.
Johnson, Michael R., 4,260,764, Cl. 546-153.000.

Pfleger, Klaus; Zacher, Wieland; Boettcher, Klaus; Skorczyk, Ronald; Buechner, Oskar; and Mietzner, Franz G., to BASF Aktiengesellschaft. Production of ethylene copolymers. 4,260,722, Cl. 526-68.000.

Pflughaupt, Rolf; Arnold, Willi; and Hellener, Gerhard, to General Motors Corporation. Mounting arrangement for independent front wheel suspension of motor vehicles. 4,260,177, Cl. 280-668.000.

Philip Morris Incorporated: *See—*
Houminer, Yoram; and Sanders, Edward B., 4,259,969, Cl. 131-278.000.

Phillips, Albert A. Railroad tie plate and correctable shim. 4,260,105, Cl. 238-303.000.

Phillips, Lawrence R.: *See—*
Jones, Elby W.; and Phillips, Lawrence R., 4,260,157, Cl. 273-177.00R.

Phillips, Martha E. Geodesic dome connector. 4,260,276, Cl. 403-172.000.

Phillips Petroleum Company: *See—*
Fodor, Lawrence M., 4,260,708, Cl. 526-125.000.
Sanclemente, Amaury, 4,260,583, Cl. 422-151.000.
Shioyama, Tod K., 4,260,845, Cl. 585-640.000.
Warzel, Fred M., 4,260,568, Cl. 264-37.000.

Phillips, Robert F.: *See—*
McIntyre, James A.; Phillips, Robert F.; and Lefevre, Joseph D., 4,260,469, Cl. 204-265.000.

Pickhardt, Dankwardt, to Sandvik Aktiebolag. Methods and apparatus for forming holes in workpieces. 4,260,300, Cl. 408-1.00R.

Pieper, Reinhold, to Olympia Werke AG. Movable support for electrostatic corona discharge device. 4,260,240, Cl. 355-3.0CH.

Pierson, Robert E., to Plano Molding Company. Latch for bait bucket door. 4,260,070, Cl. 220-335.000.

Pilipski, Mark, to Pilipski, Mark; Sturman, Martin G.; and Ebert, Michael. Saccharification of cellulose. 4,260,685, Cl. 435-161.000.

Pioneer Electronic Corporation: *See—*
Morii, Takashi; and Kurata, Junichi, 4,260,162, Cl. 369-33.000.

Piotrowski, Leo R., to Harris Corporation. Method of making Schottky barrier diode by ion implantation and impurity diffusion. 4,260,431, Cl. 148-1.500.

Piret, Norbert L.; Hopper, Meinolf; and Kudelka, Herbert, to Duisburger Dupferhutte. Production of sulphidic copper concentrates. 4,260,588, Cl. 423-37.000.

Pitney Bowes Inc.: *See—*
Dolan, Donald T.; and Calvi, Salvatore J., 4,260,243, Cl. 355-15.000.
Eckert, Alton B., Jr.; Lowe, Lynnwood; and McFiggans, Robert B., 4,259,902, Cl. 101-91.000.

Plaisance, Thomas H.: *See—*
Sekmakas, Kazys; and Plaisance, Thomas H., 4,260,730, Cl. 528-145.000.

Plaisted, Anthony C., to Celtite, Inc. Pourable grout including fast acting polyester adhesive systems and method of use. 4,260,699, Cl. 525-27.000.

Plamondon, Lawrence J. Folding sawhorse frame. 4,260,038, Cl. 182-155.000.

Plano Molding Company: *See—*
Pierson, Robert E., 4,260,070, Cl. 220-335.000.

Plapper, Juergen: *See—*
Asbeck, Adolf; Pfeiffer, Hans F.; Plapper, Juergen; and Schmid, Rolf, 4,260,686, Cl. 435-265.000.

Plasynski, Joseph E.: *See—*
Bosso, Joseph F.; Nugent, Richard M.; and Plasynski, Joseph E., 4,260,720, Cl. 528-109.000.

Plath, Peter; Wuerzer, Bruno; and Rohr, Wolfgang, to BASF Aktiengesellschaft. Substituted 3-aminopyrazoles. 4,260,775, Cl. 548-362.000.

Plewes, John T., to Bell Telephone Laboratories, Incorporated. Method for producing copper based spinodal alloys. 4,260,432, Cl. 148-2.000.

Plocki, Leonard R.: *See—*
Gorman, Harold R.; and Plocki, Leonard R., 4,260,404, Cl. 65-27.000.

Poad, William J.: *See—*
Dembicki, Michael T.; and Poad, William J., 4,260,438, Cl. 156-69.000.

Pohlmann, Edgar: *See—*
Feistkorn, Jochen; Pohlmann, Edgar; Rothmayer, Walter; Schwarzler, Peter; Steinmetz, Gunter; and Zander, Peter, 4,259,908, Cl. 104-281.000.

Poignant, Jean-Claude: *See—*
Regnier, Gilbert; Canevari, Roger; Laubie, Michel; and Poignant, Jean-Claude, 4,260,610, Cl. 424-250.000.

Politiek, Jarig: *See—*
Bakker, Pieter; Kuit, Rudolf S.; and Politiek, Jarig, 4,260,893, Cl. 250-397.000.
Bakker, Pieter; Kuit, Rudolf S.; and Politiek, Jarig, 4,260,897, Cl. 250-492.00A.

Pollard, Jerry, to Coleman Company, Inc., The. Thermal expansion compensation apparatus and method for making composite skis. 4,260,576, Cl. 264-257.000.

Pollard, John K., Jr., to Calbiochem-Behring Corp. Reagent system and method for assaying peptidase enzymes. 4,260,681, Cl. 435-24.000.

Pone, Janis: *See—*
Laska, Ronald C.; and Pone, Janis, 4,260,244, Cl. 355-35.000.

Ponomarev, Alexandr I.: *See—*
Knyazeva, Vera I.; Vasiliev, Nikolai V.; Khuditskaya, Galina S.; Ponomarev, Alexandr I.; Ponomarev, Vasily I.; and Belyansky, Oleg M., 4,259,854, Cl. 69-21.000.

Ponomarev, Vasily I.: *See—*
Knyazeva, Vera I.; Vasiliev, Nikolai V.; Khuditskaya, Galina S.; Ponomarev, Alexandr I.; Ponomarev, Vasily I.; and Belyansky, Oleg M., 4,259,854, Cl. 69-21.000.

Ponticello, Gerald S.: *See—*
Baldwin, John J.; and Ponticello, Gerald S., 4,260,609, Cl. 424-250.000.

Poppe, Wassily; Craddock, Charles F.; Gutekunst, Robert W.; Ladd, Robert G.; and Mager, Sue A., to Standard Oil Company (Indiana). Shrinkage reduction of blow molded oriented pet bottle. 4,260,567, Cl. 264-25.000.

Porteous, Don D. Thermally reversible dental astringent gels. 4,260,597, Cl. 424-49.000.

Porubsky, Juraj: *See—*
Kolinsky, Miloslav; Macho, Vendelin; Porubsky, Juraj; Kuska, Vladislav; Manas, Jaroslav; Sykora, Stanislav; and Lukas, Rudolf, 4,260,541, Cl. 260-45.8NT.

Pottharst, John E., Jr. Vapor compression distillation apparatus and method. 4,260,461, Cl. 203-7.000.

Powers, Charles T.: *See—*
Fein, Richard S.; and Powers, Charles T., 4,260,499, Cl. 252-32.500.

PPG Industries, Inc.: *See—*
Bosso, Joseph F.; Nugent, Richard M.; and Plasynski, Joseph E., 4,260,720, Cl. 528-109.000.
Bour, Thomas C., 4,260,403, Cl. 65-11.00W.
Christenson, Roger M.; Bosso, Joseph F.; Hartman, Marvis E.; and Chang, Wen-Hsuan, 4,260,716, Cl. 528-45.000.
Gorman, Harold R.; and Plocki, Leonard R., 4,260,404, Cl. 65-27.000.
Reese, Thomas J.; and Fisher, Joseph J., 4,260,408, Cl. 65-106.000.
Reese, Thomas J.; and Rodgers, Edward R., 4,260,409, Cl. 65-273.000.
Rideout, Walker H., 4,260,463, Cl. 204-98.000.
Schwenninger, Ronald L., 4,260,407, Cl. 65-99.00A.
Sleighter, George E., 4,259,866, Cl. 73-355.00R.

Precision Monolithics, Inc.: *See—*
Brown, Paul M., Jr.; and Hamade, Adib R., 4,260,911, Cl. 307-310.000.

Precision Pneumatic Palletizer, Inc.: *See—*
Lynn, William F., 4,260,309, Cl. 414-46.000.

Presto Lock Company, Division of Walter Kidde & Company, Inc.: *See—*
Remington, Richard C., 4,260,043, Cl. 190-49.000.

Wingert, Rudolf, 4,259,856, Cl. 70-70.000.
Preumont, Maurice: *See—*
Verlaeten, Jean; and Preumont, Maurice, 4,260,594, Cl. 423-421.000.
Prewo, Karl M., to United Technologies Corporation. Quick bond composite and process. 4,260,441, Cl. 156-166.000.
PRIAM: *See—*
Lun Ho, Bin; and Guerini, Albert, 4,260,208, Cl. 312-242.000.
Price, Dennis D., to Midland Metalcraft Company. Apparatus for supporting and guiding a flexible line. 4,260,119, Cl. 242-157.00R.
Princeton Applied Research Corporation: *See—*
Smith, John L.; and Whitlock, Bruce N., 4,260,467, Cl. 204-195.00H.
Princeton Polymer Laboratories: *See—*
Hudgin, Donald E.; and Zawadzki, Thomas, 4,260,548, Cl. 260-346.740.
Princeton University, The Trustees of: *See—*
Schwartz, Jeffrey; and Ward, Michael D., 4,260,842, Cl. 585-377.000.
Procter & Gamble Company, The: *See—*
Letton, James C., 4,260,529, Cl. 252-547.000.
Proulx, Raymond E. Flail feedout mechanism for a rotary mower. 4,259,782, Cl. 30-276.000.
Puls, Friedrich H.; and Ruhnke, Klaus D., to Exxon Research & Engineering Co. Butene-1 containing feed purification process(CS-165). 4,260,840, Cl. 585-259.000.
Puls, Walter: *See—*
Junge, Bodo; Krause, Hans P.; Muller, Lutz; and Puls, Walter, 4,260,622, Cl. 424-267.000.
Purkiss, Anthony J.: *See—*
Chafer, Henry J.; and Purkiss, Anthony J., 4,261,025, Cl. 361-257.000.
QED: *See—*
Mann, Walter J.; and Rosenblatt, Aaron A., 4,260,261, Cl. 356-402.000.
Quasarano, Joseph R. Shipping, transporting and dispensing container for cylindrically shaped objects. 4,260,072, Cl. 221-92.000.
Quella, Ferdinand: *See—*
Greubel, Waldemar; and Quella, Ferdinand, 4,260,219, Cl. 350-96.100.
Quibel, Jacques: *See—*
Lhonore, Pierre; Quibel, Jacques; and Jacquinot, Bernard, 4,260,838, Cl. 568-947.000.
Quist, Clark J.: *See—*
Kelley, Lawrence G.; Nelson, Wayne E.; and Quist, Clark J., 4,260,334, Cl. 417-52.000.
R. A. Pearson Co.: *See—*
Campbell, Barry D., 4,259,826, Cl. 53-543.000.
Raether, Wolfgang; Durckheimer, Walter; and Seidenath, Hans, to Hoechst Aktiengesellschaft. Antimalarial compositions. 4,260,615, Cl. 424-257.000.
Rampignon, Marc: *See—*
Periou, Pierre; and Rampignon, Marc, 4,260,189, Cl. 296-223.000.
Randolph, George J. J., Jr. Conveyor scale. 4,260,034, Cl. 177-211.000.
Ransohoff, Jackson A. Countercurrent sparger. 4,260,398, Cl. 55-41.000.
Rao, Prabhakar P.; and Sutton, David L., to Halliburton Company. Method and apparatus for nondestructive testing of cement. 4,259,868, Cl. 73-597.000.
Rapkin, Myron C.: *See—*
Barton, Nancy K.; Greene, Carmine M.; and Rapkin, Myron C., 4,260,579, Cl. 422-56.000.
Rasberger, Michael: *See—*
Rody, Jean; and Rasberger, Michael, 4,260,689, Cl. 525-55.000.
Rody, Jean; and Rasberger, Michael, 4,260,691, Cl. 525-130.000.
Rath, Albert, to C.E.P. Industries Ltd. Snowplow. 4,259,794, Cl. 37-42.0VL.
Ravel, Kanak K. R., to Block Drug Company Inc. Method and apparatus for making a vaginal cleaning device. 4,260,570, Cl. 264-46.600.
Rawcliffe, Gordon H., to National Research Development Corporation. Pole-amplitude modulation pole-changing electric motors and generators. 4,260,923, Cl. 310-184.000.
Raymond, James C., to Honeywell Information Systems Inc. Broadband high level data link communication line adapter. 4,261,035, Cl. 364-200.000.
Razdan, Raj K.; and Ghosh, Anil C., to SISA, Incorporated. 17-Cyclopropylmethyl-14-hydroxy-3-methoxymorphinan-6-one and method of treating pain with it. 4,260,617, Cl. 424-260.000.
RCA Corporation: *See—*
Ahmed, Adel A. A., 4,260,945, Cl. 323-316.000.
Ahmed, Adel A. A., 4,260,955, Cl. 330-288.000.
Branton, Tom W., 4,261,017, Cl. 358-248.000.
Grilletto, Carlo; and Vowinkel, Frank C., 4,260,886, Cl. 250-288.000.
Harford, Jack R., 4,260,956, Cl. 330-289.000.
Ipri, Alfred C.; and Flatley, Doris W., 4,259,779, Cl. 29-571.000.
Isham, Robert H.; and Petrizio, Cesare J., 4,260,960, Cl. 331-111.000.
Olsen, Gregory H.; and Cafiero, Alfred V., 4,260,525, Cl. 252-521.000.
Van Renseen, Marinus; and Wardell, Myron H., Jr., 4,261,013, Cl. 358-139.000.
Waller, Lloyd E.; and Zorbalas, George S., 4,261,008, Cl. 358-19.000.
Wang, Chih C.; and Bates, Ronald F., 4,260,647, Cl. 427-40.000.
Wheatley, Carl F., Jr., 4,260,946, Cl. 323-314.000.
Real-Pack Entwicklungs-und Verpackungstechnik GmbH: *See—*
Nold, Richard P., 4,260,097, Cl. 229-16.00R.
Reed Irrigation Systems: *See—*
Menzel, S. W. O., 4,260,111, Cl. 239-450.000.
Reed, Terry J.; and Yannone, Robert A., to Westinghouse Electric Corp. System and method for monitoring industrial gas turbine operating parameters and for providing gas turbine power plant control system inputs representative thereof. 4,259,835, Cl. 60-39.28R.
Reen, Orville W., to Allegheny Ludlum Steel Corporation. Method for producing molybdenum bearing ferrochromium. 4,260,418, Cl. 148-126.000.
Reese, Thomas J.; and Fisher, Joseph J., to PPG Industries, Inc. Use of speed changes during cycling of a shaping mold. 4,260,408, Cl. 65-106.000.
Reese, Thomas J.; and Rodgers, Edward R., to PPG Industries, Inc. Attaching flexible cover to mold for shaping glass. 4,260,409, Cl. 65-273.000.
Regnier, Gilbert; Canevari, Roger; Laubie, Michel; and Poignant, Jean-Claude, to Science Union Et Cie. Disubstituted piperazines. 4,260,610, Cl. 424-250.000.
Reichelt, Karl-Ludwig; and Trygstad, Olav E., to Nyegaard & Co. A/S. Chemical compounds. 4,260,601, Cl. 424-177.000.
Reid, John H. Flow-control apparatus and process for an oxidation ditch. 4,260,486, Cl. 210-96.100.
Reid, John N.: *See—*
Falck, John B.; Glanvill, Keith B.; and Reid, John N., 4,260,983, Cl. 340-572.000.
Reiman, Leroy A. Multiple spindle drilling apparatus. 4,260,301, Cl. 408-47.000.
Reimbold & Strick GmbH & Co KG: *See—*
Wratil, Josef, 4,260,662, Cl. 428-433.000.
Reimpell, Uwe; Reiter, Reinhard; and Grein, Lutz, to Leybold - Heraeus GmbH. Closure fixture and assembly cap. 4,259,979, Cl. 137-315.000.
Reinecke, Erich, to Wabco Fahrzeugbremsen G.m.b.H. Anti-skid and anti-spin braking system. 4,260,199, Cl. 303-96.000.
Reiner, Alberto, to Crinos Industria Farmacobiologica S.p.A. Pyridoxine derivatives. 4,260,613, Cl. 424-256.000.
Reinforced Earth Company, The: *See—*
Hilfiker, William K., 4,260,296, Cl. 405-284.000.
Reinking, Klaus: *See—*
Medem, Harald; Freitag, Dieter; and Reinking, Klaus, 4,260,695, Cl. 525-466.000.
Reis, James J.: *See—*
Robinson, Guner S.; and Reis, James J., 4,261,043, Cl. 364-725.000.
Reischl, Artur; Muller, Hanns; and Wagner, Kuno, to Bayer Aktiengesellschaft. Process for the preparation of polyurethane resins using stable dispersions as a starting component. 4,260,530, Cl. 260-29.300.
Reissenweber, Gernot: *See—*
Linhart, Friedrich; Girgensohn, Bjoern; Reissenweber, Gernot; and Hickmann, Eckhard, 4,260,562, Cl. 564-300.000.
Reiter, Reinhard: *See—*
Reimpell, Uwe; Reiter, Reinhard; and Grein, Lutz, 4,259,979, Cl. 137-315.000.
Reitter, Franz J.: *See—*
Kruger, Horst; Berndt, Wilhelm; Schwartzkopff, Ursula; Reitter, Franz J.; Hopner, Theodor; and Muhlig, Hans-Joachim, 4,260,452, Cl. 162-23.000.
Rekers, Louis J.; Katzen, Stanley J.; and Krekeler, Jerome H., to National Petro Chemicals Corp. Olefin polymerization catalyst. 4,260,706, Cl. 526-100.000.
Reliable Electric Company: *See—*
Amaya, Mauricio, 4,260,848, Cl. 174-41.000.
Reliance Electric Company: *See—*
Engle, William B., 4,260,918, Cl. 310-87.000.
Remington, Richard C., to Presto Lock Company, Division of Walter Kidde & Company, Inc. Valance clip. 4,260,043, Cl. 190-49.000.
Rempel, Dieter: *See—*
Binsack, Rudolf; Rempel, Dieter; Korber, Helmut; and Neuray, Dieter, 4,260,690, Cl. 525-64.000.
Renaud, Daniel: *See—*
Aubry, Claude; and Renaud, Daniel, 4,260,993, Cl. 343-779.000.
REP Industries, Inc.: *See—*
Penniman, Scott R., 4,260,274, Cl. 402-80.00R.
Repair-It Industries, Inc.: *See—*
Speer, Lawrence L., 4,260,439, Cl. 156-98.000.
Repro S.V.: *See—*
Peperstraete, Jan; and Breugelmans, Walter, 4,260,239, Cl. 355-3.0DD.
Rescue Products, Inc.: *See—*
Klippel, Allen P., 4,259,950, Cl. 128-89.00R.
Research Corporation: *See—*
Nicolaou, Kyriacos C.; Magolda, Ronald L.; and Claremon, David A., 4,260,806, Cl. 560-118.000.
Rettig, Vernon E.; and Myers, John R., to Deere & Company. Implement transport system. 4,260,172, Cl. 280-411.00A.
Reuther, Wolfgang; Segnitz, Adolph; Wittmann, Otto; and Schatz, Hermann, to BASF Aktiengesellschaft. Aqueous isocyanate emulsions prepared with polyglycol and polymerized unsaturated acid amide. 4,260,532, Cl. 260-29.6HN.
Rey, Hanz-Georg: *See—*
Rittersdorf, Walter; Guthlein, Werner; Werner, Wolfgang; Rey, Hanz-Georg; and Rieckmann, Peter, 4,260,777, Cl. 549-33.000.
Rhone-Poulenc Industries: *See—*
Kuntz, Emile, 4,260,750, Cl. 544-178.000.

Locatelli, Jean-Louis; and Macabrey, Louis, 4,260,539, Cl. 260-42.140.
Mirabel, Bernard; and Meiller, Francois, 4,260,388, Cl. 8-646.000.
Riba nee Hildebrand, Jutta; and Rother, Hans. Press table. 4,259,796, Cl. 38-15.000.
Ricardi, Roland P.: *See*—
Foundos, Albert P.; and Ricardi, Roland P., 4,259,867, Cl. 73-421.50R.
Rich, Stanley R., to Advanced Energy Dynamics, Inc. Process for reducing the sulfur content of coal. 4,260,394, Cl. 44-1.0SR.
Richardson-Merrell Inc.: *See*—
Carr, Albert A.; Cheng, Hsien C.; Horgan, Stephen W.; and Woodward, James K., 4,260,626, Cl. 424-273.00R.
Richardson, Sam M., III: *See*—
Dorsey, Charles L.; Dorsey, Donald L.; and Richardson, Sam M., III, 4,260,282, Cl. 405-1.000.
Richter Gedeon Vegyeszeti Gyar Rt.: *See*—
Lapis, Karoly; Szende, Bela; Jeney, Andreas; Kopper, Laszlo; Simon, Karoly; Tyihak, Erno; Kisfaludy, Lajos; Kovacs, Lajos; and Dobo, Gyorgy, 4,260,595, Cl. 424-10.000.
Ricoh Company, Ltd.: *See*—
Sasaki, Masaomi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Tsutsui, Kyoji, 4,260,672, Cl. 430-72.000.
Rideout, Walker H., to PPG Industries, Inc. Removal of organic contaminants from waste water. 4,260,463, Cl. 204-98.000.
Rieck, Gerlad C.; and Malarz, Antoni J., to General Motors Corporation. Multi-axis load cell. 4,259,863, Cl. 73-862.400.
Rieckmann, Peter: *See*—
Rittersdorf, Walter; Guthlein, Werner; Werner, Wolfgang; Rey, Hanz-Georg; and Rieckmann, Peter, 4,260,777, Cl. 549-33.000.
Riegel, Hans: *See*—
Finkelstein, Wolfgang; Riegel, Hans; and Kurzhals, Gerhard, 4,259,898, Cl. 98-40.00D.
Riegel Textile Corporation: *See*—
Goodbar, Reid C., 4,259,958, Cl. 128-287.000.
Riemer, Ronald A.: *See*—
Moss, Jack R.; Sugar, John W.; Riemer, Ronald A.; Frick, Charles E.; and Dillon, Ronald D., 4,260,490, Cl. 210-620.000.
Rigby, Victor P.: *See*—
Houston, John; and Rigby, Victor P., 4,260,297, Cl. 405-303.000.
Riker Laboratories, Inc.: *See*—
Scherrer, Robert A.; and Stern, Richard M., 4,260,547, Cl. 260-346.710.
Ringfeder G.m.b.H.: *See*—
Stiefel, Christian; and Jansen, Harry, 4,260,142, Cl. 267-9.00A.
Ripert, Roger L., to Grove Valve and Regulator Company. Skirted hub with full penetration butt weld to body. 4,260,134, Cl. 251-367.000.
Rispoli, Joseph M.; and Shaw, Janice R., to General Foods Corporation. Self-sticking bread crumb composition and process. 4,260,637, Cl. 426-96.000.
Ritchie, Leon T.; and Peppler, Michael S., to AMP Incorporated. Method of producing insulated terminals. 4,260,212, Cl. 339-97.00R.
Ritter, Albert E., to Selene Trust. Method for molding expanded plastic material articles. 4,260,571, Cl. 264-53.000.
Ritter, Barbara. Applicator swab and method of making the same. 4,259,955, Cl. 128-269.000.
Rittersdorf, Walter; Guthlein, Werner; Werner, Wolfgang; Rey, Hanz-Georg; and Rieckmann, Peter, to Boehringer Mannheim GmbH. Diagnostic agent for the detection of protein in body fluids. 4,260,777, Cl. 549-33.000.
Roast, William G.; and Adnams, Geoffrey E., to Lilly Industries Limited. Stripper ring for capsule pins. 4,260,357, Cl. 425-472.000.
Robert Bosch GmbH: *See*—
Berthel, Karl; Schmid, Olaf; Walter, Berthold; Spechner, Ludwig; Sturm, Theodor; and Degel, Hans-Peter, 4,260,973, Cl. 335-133.000.
Leussink, Reinhard; Metger, Manfred; and Fritz, Adolf, 4,259,934, Cl. 123-424.000.
Maucher, Edmund; Hofer, Friedrich-Wilhelm; and Schwerin, Gunther, 4,259,986, Cl. 137-596.120.
Schillinger, Rainer, 4,260,333, Cl. 417-45.000.
Watanabe, Risaburo; Ohtani, Masami; and Hashizume, Naoki, 4,260,343, Cl. 418-269.000.
Roberts, Thomas A.: *See*—
Gullicksen, Spencer O.; and Roberts, Thomas A., 4,260,218, Cl. 350-16.000.
Roberts, Wilbur N.: *See*—
Engelberger, Joseph F.; Lindbom, Torsten H.; Dunne, Maurice J.; Perzley, William; Roberts, Wilbur N.; and Gardner, Horace L., 4,260,940, Cl. 318-562.000.
Engelberger, Joseph F.; Lindbom, Torsten H.; Dunne, Maurice J.; Perzley, William; Roberts, Wilbur N.; and Gardner, Horace L., 4,260,941, Cl. 318-562.000.
Robertson, Allan J.: *See*—
Corver, Hans A.; and Robertson, Allan J., 4,260,592, Cl. 423-305.000.
Robertson, King G., to Coors Container Company. Aluminum alloy composition for the manufacture of container components from scrap aluminum. 4,260,419, Cl. 75-142.000.
Robinson, Guner S.; and Reis, James J., to Northrop Corporation. Coefficient extrapolator for the Haar, Walsh, and Hadamard domains. 4,261,043, Cl. 364-725.000.
Roccaforte, Harry I., to Champion International Corporation. Container having an internal support for fragile articles and blank therefor. 4,260,059, Cl. 206-588.000.
Roch, Josef; Muller, Erich; Narr, Berthold; Nickl, Josef; and Haarmann, Walter, to Boehringer Ingelheim GmbH. 3-Amino-4-phenyl-6-piperidino-1H-pyrazolo[3,4-b]-pyridines and salts thereof. 4,260,621, Cl. 424-267.000.
Rock, Heinrich: *See*—
Freissmuth, Alfred; Gmohling, Werner; and Rock, Heinrich, 4,260,413, Cl. 75-58.000.
Rockwell International Corporation: *See*—
Anderson, Mardis V.; and Dumas, Theodore A., 4,260,992, Cl. 343-761.000.
Drapac, Michael J., 4,260,963, Cl. 333-26.000.
Eshghy, Siavash, 4,259,772, Cl. 29-240.000.
Eshghy, Siavash, 4,259,773, Cl. 29-240.000.
Eshghy, Siavash, 4,259,775, Cl. 29-407.000.
Holly, Sandor; and Erdelyi, Emery, 4,260,888, Cl. 250-330.000.
Loyd, Morris S.; and O'Neill, Michael S., 4,260,657, Cl. 428-113.000.
McCollum, James H., Jr.; and Kammerer, Leo P., 4,259,838, Cl. 60-224.000.
Tosches, Anthony J., 4,259,997, Cl. 139-448.000.
Rockwell-Rimoldi S.p.A.: *See*—
Marchesi, Franco, 4,259,916, Cl. 112-221.000.
Roda, John W., to Airships International Inc. Method of assembly of airship hull. 4,259,776, Cl. 29-423.000.
Rodder, Jerome A. Bipolar fluid measuring apparatus. 4,259,968, Cl. 128-724.000.
Rodgers, Edward R.: *See*—
Reese, Thomas J.; and Rodgers, Edward R., 4,260,409, Cl. 65-273.000.
Rodrigue, Andrew A. Fuel economizer. 4,259,943, Cl. 126-292.000.
Rody, Jean; and Rasberger, Michael, to Ciba-Geigy Corporation. Polymeric light stabilizers for plastics. 4,260,689, Cl. 525-55.000.
Rody, Jean; and Rasberger, Michael, to Ciba-Geigy Corporation. Polymeric light stabilizers for plastics. 4,260,691, Cl. 525-130.000.
Roehm, Vincent P., to Thermacore, Inc. Solar collector. 4,259,946, Cl. 126-443.000.
Roelofs, Hendrik: *See*—
Wesselink, Gustaaf A.; Roelofs, Hendrik; and Van Bommel, Cornelis H. M., 4,260,931, Cl. 313-493.000.
Roger, Bernard, to U.S. Philips Corporation. Monolithic complementary darlington. 4,261,002, Cl. 357-46.000.
Rohm and Haas Company: *See*—
Krieger, Harold; and Kirch, Lawrence S., 4,260,822, Cl. 562-549.000.
Rohner, Peter, to Kabel-und Metallwerke, Gutehoffnungshuttie A.G. Spacer in concentric tube systems. 4,259,990, Cl. 138-113.000.
Rohr, Wolfgang: *See*—
Plath, Peter; Wuerzer, Bruno; and Rohr, Wolfgang, 4,260,775, Cl. 548-362.000.
Rohrer, Gene D.: *See*—
Galatha, Matthew J.; Rohrer, Gene D.; and Squires, John J., 4,260,879, Cl. 235-449.000.
Rohrig, Lothar; Bucher, Gottfried; and Klahre, Horst, to Maschinenfabrik Hennecke GmbH. Device for the discontinuous production of block foam. 4,260,355, Cl. 425-258.000.
Rolf, Meinhard; Neeff, Rutger; and Muller, Walter, to Bayer Aktiengesellschaft. Azo dye pigments containing 4-quinazolinone moieties. 4,260,540, Cl. 260-42.210.
Rollenitz, Leopold, to Vockenhuber, Karl; and Hauser, Raimund. Projection device. 4,260,246, Cl. 355-45.000.
Rolls-Royce Limited: *See*—
Goodwin, John R., 4,260,331, Cl. 416-219.00R.
Scott, Alexander; and Simmons, Roy, 4,260,326, Cl. 415-115.000.
Rolsten, Robert F., to Wright Company, The. Hand pump. 4,260,341, Cl. 417-454.000.
Ronort, Mark D.: *See*—
Lamberti, Vincent; and Ronort, Mark D., 4,260,513, Cl. 252-174.190.
Rooney, Gerald A.; Kresge, Richard E.; and Miller, Jerry H., to AFA Corporation, The. Manually operated liquid dispensing device. 4,260,082, Cl. 222-340.000.
Ropars, Raymond: *See*—
Dachert, Francois; Gelin, Jean; and Ropars, Raymond, 4,260,991, Cl. 343-756.000.
Rose, Dennis H.; and Davidson, Val E., to Pacific Scientific Company. Compact, rugged sensor for optical measurement of the size of particles suspended in a fluid. 4,260,258, Cl. 356-335.000.
Rose, Elva L.: *See*—
Clendening, Frank J., Jr.; and Rose, Elva L., 4,259,768, Cl. 28-254.000.
Rosen, Perry: *See*—
Holland, George W.; and Rosen, Perry, 4,260,818, Cl. 562-503.000.
Rosenberg, Susan L.: *See*—
Wellslager, John A.; and Rosenberg, Susan L., 4,260,007, Cl. 164-64.000.
Rosenblatt, Aaron A.: *See*—
Mann, Walter J.; and Rosenblatt, Aaron A., 4,260,261, Cl. 356-402.000.
Rosenke, Udo: *See*—
Maier, Gerhard; Rosenke, Udo; and Humbert, Manfred, 4,260,113, Cl. 241-28.000.
Rosenzweig, Shlomo. Multi-barrel rotary machine gun. 4,259,891, Cl. 89-12.000.
Rosenzweig, Walter: *See*—
Dumbri, Austin C.; and Rosenzweig, Walter, 4,260,909, Cl. 307-297.000.

Rother, Hans: *See—*
Riba nee Hildebrand, Jutta; and Rother, Hans, 4,259,796, Cl. 38-15.000.
Rother, Wolfgang: *See—*
Goldmann, Wolf; and Rother, Wolfgang, 4,260,370, Cl. 432-14.000.
Rothmayer, Walter: *See—*
Feistkorn, Jochen; Pohlmann, Edgar; Rothmayer, Walter; Schwarzler, Peter; Steinmetz, Gunter; and Zander, Peter, 4,259,908, Cl. 104-281.000.
Roussel Uclaf: *See—*
Heymes, Rene; and Lutz, Andre, 4,260,747, Cl. 544-27.000.
Routt, Wilson M., Jr.: *See—*
Armitage, John D., Jr.; and Routt, Wilson M., Jr., 4,260,249, Cl. 355-67.000.
Rouverol, William S. High-torque low-noise gearing. 4,259,875, Cl. 74-462.000.
Rowe International Inc.: *See—*
Scalera, Frank T., 4,260,905, Cl. 307-115.000.
Roy, Pradip K., to Ses, Incorporated. Photovoltaic cell. 4,260,428, Cl. 136-260.000.
Roy, Robert G.: *See—*
Cairns, James; Logan, Robert T.; McGarry, George; Roy, Robert G.; and Woods, Gilbert F., 4,260,605, Cl. 424-243.000.
Rozen, Alexandr S.: *See—*
Samarynov, Jury V.; Mednikov, Jury A.; and Rozen, Alexandr S., 4,260,096, Cl. 228-158.000.
Rozin, Boris S.: *See—*
Belyanin, Petr N.; Frolov, Konstantin V.; Kobrinsky, Aron E.; Korendyasev, Alfred I.; Rozin, Boris S.; Salamandra, Boris L.; Sokolovsky, Felix P.; Stolin, Jury V.; and Tyves, Leonid I., 4,259,876, Cl. 74-469.000.
RTL Contactor Holding S.A.: *See—*
Hohlbaum, Theodor J. M., 4,260,586, Cl. 422-269.000.
Rubbermaid Commercial Products Inc.: *See—*
Juergens, David A., 4,260,069, Cl. 220-331.000.
Rubin, Fred K.: *See—*
Fox, Daniel J.; Van Blarcom, David; and Rubin, Fred K., 4,260,528, Cl. 252-525.000.
Rubinstein, Morton K. Telephone timer device. 4,260,855, Cl. 179-7.10R.
Ruckert, Karl-Heinz: *See—*
Bach, Walter; Blumhardt, Rainer; Fusser, Rolf; and Ruckert, Karl-Heinz, 4,259,936, Cl. 123-556.000.
Rudhart, Rudolf; Schulte, Klaus; Dietrich, Werner; and Decker, Heinz, to Bayer Aktiengesellschaft. Mix head for the production of a foamable reaction mixture from fluid components. 4,260,266, Cl. 366-336.000.
Rudolphi, Kjell; and Johansson, Ingvar, to AGA Aktiebolag. Vessel for storing cryogenic liquids. 4,259,846, Cl. 62-48.000.
Rudy, Thomas P.: *See—*
Nakagawa, Toshio W.; and Rudy, Thomas P., 4,260,437, Cl. 149-19.900.
Ruhnke, Klaus D.: *See—*
Puls, Friedrich H.; and Ruhnke, Klaus D., 4,260,840, Cl. 585-259.000.
Rummler, William D.: *See—*
Barnett, William T.; Lundgren, Carl W., Jr.; Rummler, William D.; and Wang, York Y., 4,261,056, Cl. 455-273.000.
Rushton, Robert M.: *See—*
Gilman, Michael; and Rushton, Robert M., 4,260,354, Cl. 425-227.000.
Russell, David B., to M&T Chemicals Inc. Antifoulant composition and method. 4,260,535, Cl. 260-33.6UA.
Russell, John N.; Smith, David W.; and McMullen, Joseph C., to General Electric Company. Water and steam injection system for emission control of gas turbines. 4,259,837, Cl. 60-39.550.
Russell, Luther O., Jr., to Fiber Industries, Inc. Filter for high viscosity liquids. 4,260,350, Cl. 425-197.000.
Rustin, Francis: *See—*
Thompson, Earl C.; Keller, Morris C.; and Rustin, Francis, 4,260,133, Cl. 251-339.000.
Ryan, Arthur B.; and Spear, Gilmore M., to Gleason Works, The. Cutting tools having compound cutting faces. 4,260,299, Cl. 407-115.000.
Ryan, James W.; and Chung, Alfred. High sensitivity assays for angiotensin converting enzyme. 4,260,682, Cl. 435-24.000.
Saab-Scania AB: *See—*
Ejnell, Sture; and Arrdal, Borje, 4,260,160, Cl. 273-408.000.
Saccomano, Michael L.; Washburn, Jerry R.; Goodrich, Donald W.; Wagner, Victor A.; and Kaufman, Phillip A., to Computer Automation, Inc. Remote distributed interrupt control for computer peripherals. 4,261,034, Cl. 364-200.000.
SAFT Leclanche: *See—*
Lecerf, Andre; and Caillaud, Therese, 4,260,668, Cl. 429-194.000.
Saint-Gobain Vitrage: *See—*
Sawatzki, Rolf; Gubelius, Heinz-G.; Heienbrock, Joachim; Halberschmidt, Friedrich; Audi, Josef; and Schwarzenberg, Norbert, 4,260,347, Cl. 425-123.000.
Sakai, Kiyoshi: *See—*
Sasaki, Masaomi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Tsutsui, Kyoji, 4,260,672, Cl. 430-72.000.
Sakai, Yoshio: *See—*
Masuhara, Toshiaki; Minato, Osamu; Sakai, Yoshio; Sasaki, Toshio; Kubo, Masaharu; Nishimura, Kotaro; and Yasui, Tokumasa, 4,261,004, Cl. 357-51.000.
Sakamoto, Koichi: *See—*
Yasumatsu, Mutsuo; Katayama, Kenji; and Sakamoto, Koichi, 4,260,636, Cl. 426-34.000.
Sakata, Katsuyuki: *See—*
Mori, Hajime; Kohyama, Katsuhisa; Nakamura, Katsuhiko; and Sakata, Katsuyuki, 4,260,731, Cl. 528-173.000.
Sakurada, Masahiko, to Olympus Optical Co., Ltd. Automatic analysis apparatus. 4,260,581, Cl. 422-65.000.
Salamandra, Boris L.: *See—*
Belyanin, Petr N.; Frolov, Konstantin V.; Kobrinsky, Aron E.; Korendyasev, Alfred I.; Rozin, Boris S.; Salamandra, Boris L.; Sokolovsky, Felix P.; Stolin, Jury V.; and Tyves, Leonid I., 4,259,876, Cl. 74-469.000.
Salem, Robert J., to General Electric Company. Electro-acoustic transducer with horn and reflector. 4,260,928, Cl. 310-335.000.
Saligny, Yves, to Etablissements Carpano & Pons. Distributor. 4,260,856, Cl. 179-98.000.
Sallmann, Alfred: *See—*
Buhler, Niklaus; Bosshard, Hans; and Sallmann, Alfred, 4,260,544, Cl. 260-326.13C.
Buhler, Niklaus; Bosshard, Hans; and Sallmann, Alfred, 4,260,545, Cl. 260-326.13C.
Salomon, Georges P. J., to Etablissements Francois Salomon and Fils. Safety binding adapted to be mounted on a ski. 4,260,175, Cl. 280-629.000.
Samarynov, Jury V.; Mednikov, Jury A.; and Rozen, Alexandr S. Method for reduction and sizing of welded pipes and mill for effecting same. 4,260,096, Cl. 228-158.000.
Samizo, Kuniko: *See—*
Muramatsu, Kozo; and Samizo, Kuniko, 4,260,680, Cl. 435-14.000.
Sample, Thomas E., Jr.; and Horn, John M., to Dresser Industries, Inc. Silane coated silicate minerals and method for preparing same. 4,260,498, Cl. 252-28.000.
Samuels, Stephen S. Physiognomically based puzzle toy. 4,259,804, Cl. 46-16.000.
Sanclemente, Amaury, to Phillips Petroleum Company. Reduction of deposits in carbon black reactors. 4,260,583, Cl. 422-151.000.
Sanders, Edward B.: *See—*
Houminer, Yoram; and Sanders, Edward B., 4,259,969, Cl. 131-278.000.
Sandoz Ltd.: *See—*
Lister, Gordon H., 4,260,389, Cl. 8-491.100.
Sandvik Aktiebolag: *See—*
Pickhardt, Dankwardt, 4,260,300, Cl. 408-1.00R.
Saniga, George T.: *See—*
Didycz, William J.; Glassman, Donald; Maier, Edward E.; and Saniga, George T., 4,260,462, Cl. 203-22.000.
Sankyo Company Limited: *See—*
Mishima, Hiroshi; Ogiso, Akira; and Kobayashi, Shinsaku, 4,260,551, Cl. 260-410.600.
Sanried Fr. Sander & Riedmaier GmbH & Co.: *See—*
Thoma, Georg, 4,260,102, Cl. 234-112.000.
Santa Fe International Corporation: *See—*
Uyeda, Stanley T.; and Cha, John, 4,260,287, Cl. 405-168.000.
Saraga, Wolja: *See—*
Haigh, David G.; and Saraga, Wolja, 4,260,968, Cl. 333-214.000.
Sarcia, Domenico S.; Harvell, John T.; and Lewis, Robert M., to Helix Technology Corporation. Stacked disc heat exchanger for refrigerator cold finger. 4,259,844, Cl. 62-6.000.
Sargent, Claud B., to Breston, Michael P., a part interest. Method and apparatus for stabilizing a fill slope. 4,260,281, Cl. 404-127.000.
Sasaki, Masaomi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Tsutsui, Kyoji, to Ricoh Company, Ltd. Electrophotographic sensitive element having a photoconductive disazo pigment. 4,260,672, Cl. 430-72.000.
Sasaki, Reiichi: *See—*
Tomimoto, Tetsuo; Nagaoka, Yoshitomi; and Sasaki, Reiichi, 4,261,009, Cl. 358-27.000.
Sasaki, Toshiharu: *See—*
Urata, Yoshihito; and Sasaki, Toshiharu, 4,260,120, Cl. 242-201.000.
Sasaki, Toshio: *See—*
Masuhara, Toshiaki; Minato, Osamu; Sakai, Yoshio; Sasaki, Toshio; Kubo, Masaharu; Nishimura, Kotaro; and Yasui, Tokumasa, 4,261,004, Cl. 357-51.000.
Sasaki, Yoshitaka, to Hitachi Metals, Ltd. Toner image pressure-fixing device. 4,259,920, Cl. 118-116.000.
Satellite Business Systems: *See—*
Dostis, Irving; Lee, Myung-Ki; and Shimbo, Osamu, 4,261,053, Cl. 375-60.000.
Saul, David L., to United States of America, Navy. Printed circuit waveguide to microstrip transition. 4,260,964, Cl. 533-26.000.
Saul, Franz J. Method and apparatus for producing a collapsibly foldable packaging sleeve having a polygonal cross-section. 4,260,446, Cl. 156-443.000.
Save-O-Seal: *See—*
Muscariello, Tullio, 4,260,447, Cl. 156-494.000.
Sawada, Yasunobu: *See—*
Kobayashi, Kengo; and Sawada, Yasunobu, 4,260,986, Cl. 340-680.000.
Sawatzki, Rolf; Gubelius, Heinz-G.; Heienbrock, Joachim; Halberschmidt, Friedrich; Audi, Josef; and Schwarzenberg, Norbert, to Saint-Gobain Vitrage. Apparatus for producing spacer frames for insulating glass window structures. 4,260,347, Cl. 425-123.000.
Scalera, Frank T., to Rowe International Inc. Device for setting dip switches. 4,260,905, Cl. 307-115.000.

Scalet, Arno, to Interesco International Research Corporation. Device for powder recovery from powder-spray housings. 4,260,400, Cl. 55-290.000.

Scarlett, John C.: *See—*
Summers, Frank V.; Meissner, David C.; and Scarlett, John C., 4,260,412, Cl. 75-35.000.

Schade, John E.: *See—*
Schultz, William G.; Neumann, Harry J.; and Schade, John E., 4,260,638, Cl. 426-287.000.

Schaefer, Louis F.: *See—*
Frohbach, Hugh F.; Myers, Robert E.; Peppers, Norman A.; Siwecki, Thomas L.; Schaefer, Louis F.; and Macovski, Albert, 4,261,007, Cl. 358-5.000.

Schaffan, Stephan J., to Atlas Tool Company. Curvable track for model railroads. 4,260,104, Cl. 238-10.00E.

Schaller, Karl-Heinz: *See—*
Arendt, Klaus; Hasler, Werner; and Schaller, Karl-Heinz, 4,259,903, Cl. 101-93.030.

Scharla-Nielsen, Hans, to Harris Corporation. Real-time adaptive power control in satellite communications systems. 4,261,054, Cl. 455-12.000.

Schatz, Hermann: *See—*
Reuther, Wolfgang; Segnitz, Adolph; Wittmann, Otto; and Schatz, Hermann, 4,260,532, Cl. 260-29.6HN.

Schenck, Stephen R.: *See—*
Closson, Thomas A.; Oxford, David B.; Schenck, Stephen R.; and Seitchik, Jerold A., 4,261,044, Cl. 365-8.000.

Scherberg, Neal H., to University Patents, Inc. Radioiodine labeling during protein synthesis. 4,260,737, Cl. 536-28.000.

Schering Aktiengesellschaft: *See—*
Kerb, Ulrich; Stahnke, Manfred; and Wiechert, Rudolf, 4,260,464, Cl. 204-158.0HA.

Schering-Corporation: *See—*
Mayer, Joseph; and Sherlock, Margaret H., 4,260,759, Cl. 544-333.000.

Scherrer, Robert A.; and Stern, Richard M., to Riker Laboratories, Inc. 5H-Indeno[5,6-b]furans. 4,260,547, Cl. 260-346.710.

Schillinger, Rainer, to Robert Bosch GmbH. Method and apparatus for controlling a fuel injection system. 4,260,333, Cl. 417-45.000.

Schinski, William L.; Chan, David C. K.; and Huang, Irene C., to Chevron Research Company. Herbicidal and plant-growth-regulating N-haloacetylphenylamino carbonyl oximes. 4,260,410, Cl. 71-76.000.

Schittenhelm, Rudolf, to Siemens Aktiengesellschaft. Radiation diagnostic apparatus for generating tomographic images. 4,260,895, Cl. 250-445.00T.

Schliebener, Claus: *See—*
Wernicke, Hans J.; Kreuter, Walter; and Schliebener, Claus, 4,260,474, Cl. 208-57.000.

Schliep, Hans-Jochen: *See—*
Jonas, Rochus; Schliep, Hans-Jochen; and Schorscher, Ernst, 4,260,628, Cl. 424-274.000.

Schmalz, Karl H.; Schmidt, Arnold; and Ulrich, Karl H., to Hombak Maschinenfabrik K.G. Rotatable cutter spindle. 4,260,002, Cl. 144-230.000.

Schmeckenbecher, Arnold F., to International Business Machines Corp. Method of reworking substrates, and solutions for use therein. 4,260,451, Cl. 156-664.000.

Schmid, Dieter: *See—*
Bennoit, Horst; and Schmid, Dieter, 4,260,495, Cl. 210-772.000.

Schmid, Olaf: *See—*
Berthel, Karl; Schmid, Olaf; Walter, Berthold; Spechner, Ludwig; Sturm, Theodor; and Degel, Hans-Peter, 4,260,973, Cl. 335-133.000.

Schmid, Rolf: *See—*
Asbeck, Adolf; Pfeiffer, Hans F.; Plapper, Juergen; and Schmid, Rolf, 4,260,686, Cl. 435-265.000.

Schmidt, Alfred W.: *See—*
Freeman, Richard B.; and Schmidt, Alfred W., 4,259,858, Cl. 72-391.000.

Schmidt, Arnold: *See—*
Schmalz, Karl H.; Schmidt, Arnold; and Ulrich, Karl H., 4,260,002, Cl. 144-230.000.

Schmidt, Gunter, to Du Pont de Nemours, E. I., and Company. X-ray unit. 4,260,896, Cl. 250-468.000.

Schmidt, Manfred; Kemperman, Theo; Freitag, Dieter; Fries, Hermann; and Esch, Erich, to Bayer Aktiengesellschaft. Resins based on novolaks, their production and their use as tackifiers. 4,260,704, Cl. 525-501.000.

Schmidt, Oskar; and Sibral, Walter, to Lim-Holding S.A. Polyurea polymers formed from polyethers having terminal amino groups. 4,260,729, Cl. 528-68.000.

Schmidt, William K.; Smith, Christine; Smith, Dewey H., Jr.; and Vernier, Vernon G., to Du Pont de Nemours, E. I., and Company. Treating pain with acetaminophen and 1,4-dimethyl-5-p-chlorobenzoyl-pyrrole-2-acetic acid. 4,260,629, Cl. 424-274.000.

Schmitt, Frederick L.: *See—*
Mookherjee, Braja D.; Wilson, Richard A.; Schmitt, Frederick L.; and Vock, Manfred H., 4,260,512, Cl. 252-174.110.
Sprecker, Mark A.; Vock, Manfred H.; Schmitt, Frederick L.; Vinals, Joaquin; and Kiwala, Jacob, 4,260,511, Cl. 252-174.110.

Schmitt, Gunter K.: *See—*
Trutschel, Hartwig H.; Schmitt, Gunter K.; and Sendelbach, Franz J., 4,260,144, Cl. 270-14.000.

Schneider, Paul: *See—*
Staiger, Gerhard; Jaggard, James F. R.; and Schneider, Paul, 4,260,710, Cl. 526-142.000.

Schnoes, Heinrich K.: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; Paaren, Herbert E.; and Hamer, David E., 4,260,549, Cl. 260-397.200.
DeLuca, Hector F.; Schnoes, Heinrich K.; and Esvelt, Robert P., 4,260,804, Cl. 560-117.000.

Schoenfeld, Alexander. Display apparatus and associated circuit. 4,259,800, Cl. 40-444.000.

Scholz, Franz, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Ceramic-insulated pipe for the transport of hot fluids. 4,259,993, Cl. 138-149.000.

Schorscher, Ernst: *See—*
Jonas, Rochus; Schliep, Hans-Jochen; and Schorscher, Ernst, 4,260,628, Cl. 424-274.000.

Schreck, Philipp; and Buck, Gerold A. Apparatus for in-situ production of concrete slabs. 4,260,126, Cl. 249-20.000.

Schreck, Ronald: *See—*
Trenkle, Robert W.; Mookherjee, Braja D.; Hall, John B.; Kasper, Robin; Vock, Manfred H.; Schreck, Ronald; Granda, Edward J.; and Vinals, Joaquin F., 4,260,527, Cl. 252-522.00R.

Schroeder, Hobe; and Thomka, Donald E., to Standard Oil Company (Indiana). Aged molten color of maleic anhydride. 4,260,546, Cl. 260-346.760.

Schroeder, William, to Aelco Corporation. Dual separable dispenser. 4,260,077, Cl. 222-137.000.

Schuck, Ludwig, to Carl Schenck Ag. Arrangement for the transfer of conveyed articles between intersecting trackways. 4,259,907, Cl. 104-48.000.

Schulman, Bernard L., to Tosco Corporation. Single retort manufacturing technique for producing valuable char and gases from coke. 4,260,456, Cl. 201-12.000.

Schulte, Klaus: *See—*
Rudhart, Rudolf; Schulte, Klaus; Dietrich, Werner; and Decker, Heinz, 4,260,266, Cl. 366-336.000.

Schultz, William G.; Neumann, Harry J.; and Schade, John E., to United States of America, Agriculture. Method of peeling fruits and vegetables with carboxylic acids. 4,260,638, Cl. 426-287.000.

Schultz, William J.; and Smith, Samuel, to Minnesota Mining and Manufacturing Company. Polymers containing cyclic ether units joined through 2,6-diyl linkages. 4,260,702, Cl. 525-334.000.

Schuppner, Harry R., Jr., to Merck & Co., Inc. Low-density xanthan gums. 4,260,741, Cl. 536-114.000.

Schutt, Hermann, to Bayer Aktiengesellschaft. Stereoselective resolution of phenylglycine derivatives and 4-hydroxyphenylglycine derivatives with enzyme resins. 4,260,684, Cl. 435-106.000.

Schutze, Detlef-Ingo; and Wunderlich, Klaus, to Bayer Aktiengesellschaft. Process for the preparation of thioindigo compounds. 4,260,778, Cl. 549-52.000.

Schwab, Frederick C., to Mobil Oil Corporation. p-Methylstyrene diene block copolymers. 4,260,694, Cl. 525-314.000.

Schwander, Hansrudolf; and Zickendraht, Christian, to Ciba-Geigy Aktiengesellschaft. Naphtholactam dyes. 4,260,770, Cl. 548-159.000.

Schwartz, Jeffrey; and Ward, Michael D., to Princeton University, The Trustees of. Isomerization of olefins utilizing heterogeneous dioxyzirconium catalysts. 4,260,842, Cl. 585-377.000.

Schwartzkopff, Ursula: *See—*
Kruger, Horst; Berndt, Wilhelm; Schwartzkopff, Ursula; Reitter, Franz J.; Hopner, Theodor; and Muhlig, Hans-Joachim, 4,260,452, Cl. 162-23.000.

Schwarze, Manfred: *See—*
Kicherer, Robert; and Schwarze, Manfred, 4,260,977, Cl. 337-318.000.

Schwarzenberg, Norbert: *See—*
Sawatzki, Rolf; Gubelius, Heinz-G.; Heienbrock, Joachim; Halberschmidt, Friedrich; Audi, Josef; and Schwarzenberg, Norbert, 4,260,347, Cl. 425-123.000.

Schwarzler, Peter: *See—*
Feistkorn, Jochen; Pohlmann, Edgar; Rothmayer, Walter; Schwarzler, Peter; Steinmetz, Gunter; and Zander, Peter, 4,259,908, Cl. 104-281.000.

Schwenninger, Ronald L., to PPG Industries, Inc. Gas cushioned ice skate edge stretcher. 4,260,407, Cl. 65-99.00A.

Schwerin, Gunther: *See—*
Maucher, Edmund; Hofer, Friedrich-Wilhelm; and Schwerin, Gunther, 4,259,986, Cl. 137-596.120.

Science Union Et Cie: *See—*
Regnier, Gilbert; Canevari, Roger; Laubie, Michel; and Poignant, Jean-Claude, 4,260,610, Cl. 424-250.000.

Scott, Alexander; and Simmons, Roy, to Rolls-Royce Limited. Blade for a gas turbine engine. 4,260,326, Cl. 415-115.000.

Scott-Jackson, Dennis G.; and Lim, Hui C., to Windsor Machine Company Limited. Bar jointing. 4,259,783, Cl. 30-384.000.

Scott, John W., to Chevron Research Company. Hydrocarbon cracking process. 4,260,475, Cl. 208-113.000.

Scott, Michael A.: *See—*
Dapp, George P.; and Scott, Michael A., 4,260,664, Cl. 428-476.900.

Scott, Robert S. Wash bottle and method for ameliorating hemorrhoids. 4,259,954, Cl. 128-248.000.

Scroggins, Lloyd A.: *See—*
Kranz, Paul J.; and Scroggins, Lloyd A., 4,260,008, Cl. 164-431.000.

Seamone, Woodrow: *See—*
Loveless, John H.; and Seamone, Woodrow, 4,260,035, Cl. 180-6.500.

Sebestyen, Gyula: *See*—
Hermecz, Istvan; Meszaros, Zoltan; Breining, Tibor; Virag, Sandor; Vasvari nee Debreczi, Lelle; Horvath, Agnes; Nagy, Gabor; Mandi, Attila; Szuts, Tamas; Bitteer, Istvan; and Sebestyen, Gyula, 4,260,612, Cl. 424-251.000.
Seco Maschinenbau GmbH & Co. KG: *See*—
Biesinger, Erwin, 4,259,855, Cl. 69-30.000.
Seefeld, Dean E.: *See*—
Campbell, Hallis D.; Burrough, Donald E.; and Seefeld, Dean E., 4,259,900, Cl. 100-88.000.
Segawa, Yoshihiro: *See*—
Yasuda, Eturo; Segawa, Yoshihiro; and Ohta, Minoru, 4,260,978, Cl. 338-34.000.
Segnitz, Adolph: *See*—
Reuther, Wolfgang; Segnitz, Adolph; Wittmann, Otto; and Schatz, Hermann, 4,260,532, Cl. 260-29.6HN.
Seid, Bobby P.; and Hopper, Laurie P. Wood cutter and loader. 4,259,886, Cl. 83-425.200.
Seidel, William C.: *See*—
Mitchell, William A.; and Seidel, William C., 4,260,642, Cl. 426-579.000.
Seidenath, Hans: *See*—
Raether, Wolfgang; Durckheimer, Walter; and Seidenath, Hans, 4,260,615, Cl. 424-257.000.
Seiller, Pierre F. X. Clasp fastener. 4,259,973, Cl. 132-48.00R.
Seitchik, Jerold A.: *See*—
Closson, Thomas A.; Oxford, David B.; Schenck, Stephen R.; and Seitchik, Jerold A., 4,261,044, Cl. 365-8.000.
Seitz, Robert F., to Youngstown Steel Door Company, The. Power wheel for folding doors. 4,260,046, Cl. 192-8.00R.
Seki, Mitsuaki: *See*—
Ishiwatari, Masumi; Horyu, Sakae; and Seki, Mitsuaki, 4,261,042, Cl. 364-709.000.
Sekiguchi, Kazuo: *See*—
Kametaka, Norio; Marumo, Kuniomi; Tokuda, Kiyonori; and Sekiguchi, Kazuo, 4,260,813, Cl. 560-234.000.
Sekino, Teruyoshi; and Ogasawara, Takaaki, to Kobe Steel, Limited. Automatic welding apparatus for upward welding of curved joint. 4,260,870, Cl. 219-124.330.
Sekisui Kagaku Kogyo Kabushiki Kaisha: *See*—
Mayumi, Masakatsu; Mitooka, Kenji; and Fujiwara, Sigeharu, 4,260,445, Cl. 156-276.000.
Sekmakas, Kazys; and Plaisance, Thomas H., to DeSoto, Inc. Preparation of bisphenol-formaldehyde ethers using nitric acid. 4,260,730, Cl. 528-145.000.
Selene Trust: *See*—
Ritter, Albert E., 4,260,571, Cl. 264-53.000.
Sendelbach, Franz J.: *See*—
Trutschel, Hartwig H.; Schmitt, Gunter K.; and Sendelbach, Franz J., 4,260,144, Cl. 270-14.000.
Senderling, Ronald L.: *See*—
Cassutt, Thomas R.; Messerly, James W.; and Senderling, Ronald L., 4,260,700, Cl. 525-113.000.
Seo, Hiroshi: *See*—
Fujiwara, Tatsuo; Watanabe, Masayasu; Yabumoyo, Mikio; Kanemori, Takaaki; and Seo, Hiroshi, 4,260,356, Cl. 425-311.000.
Serboki, Giancarlo: *See*—
D'Amico, Fabrizio; Serboki, Giancarlo; and Foti, Vincenzo, 4,260,565, Cl. 264-13.000.
Service (Engineers) Limited: *See*—
Gilman, Michael; and Rushton, Robert M., 4,260,354, Cl. 425-227.000.
Ses, Incorporated: *See*—
Moyer, Richard L., 4,260,429, Cl. 136-256.000.
Roy, Pradip K., 4,260,428, Cl. 136-260.000.
Sexton, Peter: *See*—
DeCristofaro, Nicholas J.; Levinson, Samuel; and Sexton, Peter, 4,260,666, Cl. 428-668.000.
SGS Ates Componenti Elettronici S.p.A.: *See*—
Colombo, Antonio, 4,260,935, Cl. 315-381.000.
Shafer, John L., to Occidental Research Corporation. Recovery of magnesia from oil shale. 4,260,192, Cl. 299-2.000.
Shaffer, Robert W.; and Morse, Henry W., to Ingersoll-Rand Company. Housing means for defining air/oil separator and oil reservoir assembly. 4,260,402, Cl. 55-505.000.
Shah, Mayur S.: *See*—
Iseler, Kenneth A.; and Shah, Mayur S., 4,260,538, Cl. 260-40.00R.
Shale Oil Science & Systems, Inc.: *See*—
O'ffill, Joseph M., 4,260,371, Cl. 432-82.000.
Shanker, Ramakrishna: *See*—
Munnerlyn, Charles R.; Joba, Lawrence R.; and Shanker, Ramakrishna, 4,260,227, Cl. 351-24.000.
Sharp Kabushiki Kaisha: *See*—
Nagasaka, Takakazu; Fukuma, Yositaka; and Mochizuki, Daisuke, 4,261,036, Cl. 364-405.000.
Shaw, Anthony. Apparatus for dispensing a liquid eyewash. 4,259,953, Cl. 128-233.000.
Shaw, Janice R.: *See*—
Rispoli, Joseph M.; and Shaw, Janice R., 4,260,637, Cl. 426-96.000.
Sheaks, Lloyd D.; and Drew, W. Howard, to Kaltec Scientific Instrument, Inc. Smoothness absorbency tester. 4,259,862, Cl. 73-73.000.
Shell Oil Company: *See*—
O'Donnell, Albert E.; and Gum, Clarence; R., 4,260,844, Cl. 585-523.000.
Sheng, Ming N.: *See*—
Kao, Jar-lin; and Sheng, Ming N., 4,260,814, Cl. 560-266.000.
Shepherd, Robert G.: *See*—
Albright, Jay D.; Miner, Thomas G.; and Shepherd, Robert G., 4,260,816, Cl. 562-452.000.
Sherlock, Margaret H.: *See*—
Mayer, Joseph; and Sherlock, Margaret H., 4,260,759, Cl. 544-333.000.
Sherman, Paul D., Jr.: *See*—
Morrell, Dennis G.; and Sherman, Paul D., Jr., 4,260,828, Cl. 568-454.000.
Shibata, Norio: *See*—
Aida, Toshiyuki; Taguchi, Sadanori; Yuito, Isamu; Kawabe, Ushio; Yamamoto, Shigehiko; Honda, Yukio; Shibata, Norio; and Okano, Hiroshi, 4,260,665, Cl. 428-633.000.
Shibazaki, Kenji: *See*—
Murata, Tomoji; Shibazaki, Kenji; Arai, Kenichi; and Kitagawa, Tsuneo, 4,260,248, Cl. 355-60.000.
Shibuya Kogyo Company, Ltd.: *See*—
Wada, Yoshinobu, 4,259,999, Cl. 141-57.000.
Shigeta, Haruhiko: *See*—
Iida, Yoshihiro; Shigeta, Haruhiko; and Akimoto, Hisao, 4,259,859, Cl. 73-15.00A.
Shih, David H.: *See*—
Christensen, Burton G.; and Shih, David H., 4,260,627, Cl. 424-274.000.
Shim, Joosup, to Mobil Oil Corporation. Lubricant compositions containing antioxidant mixtures comprising substituted thiazoles and substituted thiadiazole compounds. 4,260,501, Cl. 252-47.500.
Shimada, Masakatsu: *See*—
Fukuda, Kotaro; Okamoto, Yosinori; Shimada, Masakatsu; Kato, Toshiaki; Tabuchi, Katsuhiko; Shimura, Makoto; and Fujiwara, Takashi, 4,259,965, Cl. 128-640.000.
Shimano Industrial Company Limited: *See*—
Nagano, Masashi; and Isobe, Mitsuhide, 4,259,873, Cl. 474-82.000.
Ueno, Tadashi, 4,259,880, Cl. 74-594.200.
Watarai, Etsuyoshi, 4,259,879, Cl. 74-501.50R.
Shimbo, Osamu: *See*—
Dostis, Irving; Lee, Myung-Ki; and Shimbo, Osamu, 4,261,053, Cl. 375-60.000.
Shimizu, Akira: *See*—
Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, 4,260,236, Cl. 355-3.0TR.
Shimohori, Yukio: *See*—
Takano, Hideo; Shimohori, Yukio; and Fukuda, Shigeho, 4,260,351, Cl. 425-113.000.
Shimoyashiki, Nobuyoshi: *See*—
Akiyama, Hiroyuki; Shimoyashiki, Nobuyoshi; Hatakeyama, Hideo; and Yamamoto, Toru, 4,260,572, Cl. 264-53.000.
Shimoyashiki, Shigehiro: *See*—
Yamamoto, Hajime; and Shimoyashiki, Shigehiro, 4,259,861, Cl. 73-40.50R.
Shimura, Makoto: *See*—
Fukuda, Kotaro; Okamoto, Yosinori; Shimada, Masakatsu; Kato, Toshiaki; Tabuchi, Katsuhiko; Shimura, Makoto; and Fujiwara, Takashi, 4,259,965, Cl. 128-640.000.
Shinko-Pfaudler Company Ltd.: *See*—
Ito, Masaharu; Kondo, Shiro; and Honjo, Kazuo, 4,260,492, Cl. 210-386.000.
Shinn, Robert W.: *See*—
Lyons, James E.; Suld, George; and Shinn, Robert W., 4,260,808, Cl. 560-131.000.
Shinoi, Tsuyoshi; and Oshima, Setsuo, to Nippon Tsushin Kogyo KK; and TIE/Communications, Inc. Office line connection circuit during service interruptions in key telephone apparatus. 4,260,857, Cl. 179-99.00R.
Shioda Dental Manufacturing Co., Ltd.: *See*—
Hobo, Sumiya; and Shioda, Nobuhiro, 4,260,377, Cl. 433-58.000.
Shioda, Nobuhiro: *See*—
Hobo, Sumiya; and Shioda, Nobuhiro, 4,260,377, Cl. 433-58.000.
Shioyama, Tod K., to Phillips Petroleum Company. Alcohol dehydration employing a zinc aluminate catalyst. 4,260,845, Cl. 585-640.000.
Shiplee, Lewis D., III. Macrame devices. 4,260,185, Cl. 289-16.500.
Shipley Company, Inc.: *See*—
Kretas, George A.; and Ireland, Irving R., 4,260,493, Cl. 210-714.000.
Shirahata, Ryuji; Kitamoto, Tatsuji; Yamada, Yasuyuki; and Akashi, Goro, to Fuji Photo Film Co., Ltd. Method of producing magnetic recording medium. 4,260,466, Cl. 204-192.00M.
Shirasu, Hirotoshi: *See*—
Ohnishi, Makoto; and Shirasu, Hirotoshi, 4,261,051, Cl. 370-58.000.
Shoemaker, Richard E.: *See*—
Walter, Henry J.; Kunz, Raymond W.; and Shoemaker, Richard E., 4,260,875, Cl. 219-364.000.
Short, James E., Jr.: *See*—
Douda, Bernard E.; Parrish, Clyde F.; and Short, James E., Jr., 4,260,509, Cl. 252-171.000.
Showa Denko K.K.: *See*—
Iida, Yoshihiro; Shigeta, Haruhiko; and Akimoto, Hisao, 4,259,859, Cl. 73-15.00A.
Kametaka, Norio; Marumo, Kuniomi; Tokuda, Kiyonori; and Sekiguchi, Kazuo, 4,260,813, Cl. 560-234.000.
Shuck, Robert E.: *See*—
Faverty, Delmar A.; and Shuck, Robert E., 4,260,265, Cl. 366-101.000.
Shum, Yick-Mow; and Huang, Wann-Sheng, to Texaco Inc. Method for steam injection in steeply dipping formations. 4,260,018, Cl. 166-272.000.

Shuttlewood, Victor C.: *See*—
Drew, John F.; Pepper, John A.; Shuttlewood, Victor C.; and West, Keith D., 4,260,752, Cl. 544-190.000.

Sibral, Walter: *See*—
Schmidt, Oskar; and Sibral, Walter, 4,260,729, Cl. 528-68.000.

Siegl, Ludwig R.: *See*—
Baker, Gregory N.; Bateson, John E.; Brown, Earl T.; Delgado, Hortensia E.; Siegl, Ludwig R.; and Thomas, Delbert C., Jr., 4,261,039, Cl. 364-519.000.

Siemens Aktiengesellschaft: *See*—
Greubel, Waldemar; and Quella, Ferdinand, 4,260,219, Cl. 350-96.100.
Kostka, Hana, 4,260,521, Cl. 252-443.000.
Neumann, Leopold, 4,260,894, Cl. 250-445.00T.
Schittenhelm, Rudolf, 4,260,895, Cl. 250-445.00T.
Troebel, Werner; and Klatt, Erwin, 4,260,969, Cl. 335-38.000.

Sih, John C., to Upjohn Company, The. 19-Hydroxy-inter-phenylene-13,14-dihydro-PG_1-compounds. 4,260,783, Cl. 560-53.000.

Sih, John C., to Upjohn Company, The. 9-Deoxy-9-methylene-11-deoxy-inter-phenylene-19-oxo-PGF_1 compounds. 4,260,784, Cl. 560-53.000.

Sih, John C., to Upjohn Company, The. 13,14-Didehydro-inter-phenylene-19-oxo-PGF_1 compounds. 4,260,785, Cl. 560-53.000.

Sih, John C., to Upjohn Company, The. 13,14-Didehydro-inter-phenylene-11-deoxy-19-oxo-PGE_1 compounds. 4,260,786, Cl. 560-53.000.

Sih, John C., to Upjohn Company, The. 13,14-Didehydro-inter-phenylene-19-oxo-PGE_1 compounds. 4,260,787, Cl. 560-53.000.

Sih, John C., to Upjohn Company, The. 13,14-Didehydro-inter-phenylene-9-deoxy-9-methylene-19-oxo-PGF_1 compounds. 4,260,788, Cl. 560-53.000.

Sih, John C., to Upjohn Company, The. 13,14-Didehydro-inter-phenylene-11-deoxy-11-hydromethyl-19-oxo-PGF_1 compounds. 4,260,789, Cl. 560-53.000.

Sih, John C., to Upjohn Company, The. 13,14-Didehydro-inter-phenylene-11-deoxy-11-hydroxymethyl-9-deoxy-9-methylene-19-oxo-PGF_1 compounds. 4,260,790, Cl. 560-53.000.

Sih, John C., to Upjohn Company, The. 13,14-Didehydro-inter-phenylene-11-deoxy-9-deoxy-9-methylene-19-oxo-PGF_1 compounds. 4,260,791, Cl. 560-53.000.

Sih, John C., to Upjohn Company, The. 13,14-Dihydro-inter-phenylene-19-oxo-PGF_1 compounds. 4,260,792, Cl. 560-53.000.

Sih, John C., to Upjohn Company, The. 9-Deoxy-9-methylene-inter-phenylene-19-oxo-PGF_1 compounds. 4,260,793, Cl. 560-53.000.

Sih, John C., to Upjohn Company, The. 11-Deoxy-inter-phenylene-19-oxo-PGE_1 compounds. 4,260,794, Cl. 560-53.000.

Sih, John C., to Upjohn Company, The. Inter-phenylene-19-oxo-PGE_1 compounds. 4,260,795, Cl. 560-53.000.

Sih, John C., to Upjohn Company, The. Inter-phenylene-19-oxo-PGF_1 compounds. 4,260,796, Cl. 560-53.000.

Sih, John C., to Upjohn Company, The. 9-Deoxy-9-methylene-11-deoxy-11-hydroxymethyl-inter-phenylene-19-oxo-PGF_1 compounds. 4,260,797, Cl. 560-53.000.

Sih, John C., to Upjohn Company, The. 13,14-Dihydro-inter-phenylene-9-deoxy-9-methylene-19-oxo-PGF_1 compounds. 4,260,798, Cl. 560-53.000.

Sih, John C., to Upjohn Company, The. 13,14-Dihydro-inter-phenylene-11-deoxy-11-hydroxymethyl-19-oxo-PGF_1 compounds. 4,260,799, Cl. 560-53.000.

Sih, John C., to Upjohn Company, The. 13,14-Dihydro-inter-phenylene-11-deoxy-9-deoxy-9-methylene-19-oxo-PGF_1 compounds. 4,260,800, Cl. 560-53.000.

Sih, John C., to Upjohn Company, The. 13,14-Dihydro-inter-phenylene-11-deoxy-19-oxo-PGF_1 compounds. 4,260,801, Cl. 560-53.000.

Sih, John C., to Upjohn Company, The. 19-Hydroxy-inter-oxa-pg_1 compounds. 4,260,807, Cl. 560-121.000.

Sih, John C., to Upjohn Company, The. 19-Hydroxy-19-methyl-cis-4,5-didehydro-PG_1 compounds. 4,260,819, Cl. 562-503.000.

Sih, John C., to Upjohn Company, The. 2-Decarboxy-2-aminomethyl-19-keto-PG compounds. 4,260,825, Cl. 564-384.000.

Silin, Evgeny L.: *See*—
Berenov, Alexandr D.; Krainev, Vladislav P.; Mansurov, Midkhat M.; and Silin, Evgeny L., 4,260,010, Cl. 164-445.000.

Silver, Alexander, to Garrett Corporation, The. Permanent magnet rotor assembly having rectangularly shaped tongues. 4,260,921, Cl. 310-156.000.

Silverstein, Spencer: *See*—
McLeod, Francis; Silverstein, Spencer; and Kurtz, Robert J., 4,259,870, Cl. 73-861.250.

Simmonds, Milo R., to A-T-O Inc. Electrically heated hand held vaporizer for vapor polishing plastic surfaces. 4,260,873, Cl. 219-273.000.

Simmons, Richard P., to Allegheny Ludlum Steel Corporation. Decarburizing molten metal. 4,260,415, Cl. 75-60.000.

Simmons, Roy: *See*—
Scott, Alexander; and Simmons, Roy, 4,260,326, Cl. 415-115.000.

Simon, Eli. Flame-proofing of flexible polyurethane foamed plastics by post-treatment using aqueous ammoniacal combinations of benzene-phosphonic acid/melamine salts and polymeric chlorine-containing latex. 4,260,688, Cl. 521-54.000.

Simon, Karoly: *See*—
Lapis, Karoly; Szende, Bela; Jeney, Andreas; Kopper, Laszlo; Simon, Karoly; Tyihak, Erno; Kisfaludy, Lajos; Kovacs, Lajos; and Dobo, Gyorgy, 4,260,595, Cl. 424-10.000.

Sinclair, James S.: *See*—
Bennett, Aubrey; Macneal, Lachlan D. C.; and Sinclair, James S., 4,260,063, Cl. 211-4.000.

Sindo, Isao; Matsuoka, Yoshio; and Yoshida, Kasumi, to Hitachi, Ltd. Clinical analyzer. 4,260,580, Cl. 422-64.000.

Singer Company, The: *See*—
Herron, William L.; and Newman, Albert L., 4,260,207, Cl. 312-208.000.
Johnson, Ralph E., 4,259,914, Cl. 112-184.000.
Mallett, John H., 4,259,789, Cl. 434-366.000.
Szostak, Jan, 4,259,915, Cl. 112-217.400.

Singer, Harry A.: *See*—
Hemperly, William R., Jr.; and Singer, Harry A., 4,260,273, Cl. 401-48.000.

Singh, Param I., to Avco Everett Research Laboratory, Inc. Vortex-diode check valve with flexible diaphragm. 4,259,988, Cl. 137-812.000.

SISA, Incorporated: *See*—
Razdan, Raj K.; and Ghosh, Anil C., 4,260,617, Cl. 424-260.000.

Sittler, Edwin C. Portable sign. 4,259,803, Cl. 40-607.000.

Siverstein, Marcia. Doll which grows. 4,259,807, Cl. 46-161.000.

Siwecki, Thomas L.: *See*—
Frohbach, Hugh F.; Myers, Robert E.; Peppers, Norman A.; Siwecki, Thomas L.; Schaefer, Louis F.; and Macovski, Albert, 4,261,007, Cl. 358-5.000.

Skorczyk, Ronald: *See*—
Pfleger, Klaus; Zacher, Wieland; Boettcher, Klaus; Skorczyk, Ronald; Buechner, Oskar; and Mietzner, Franz G., 4,260,722, Cl. 526-68.000.

SKW Trostberg Aktiengesellschaft: *See*—
Freissmuth, Alfred; Gmohling, Werner; and Rock, Heinrich, 4,260,413, Cl. 75-58.000.

Sky-Eagle, William A., Jr. Device for handling oil laden pad. 4,260,186, Cl. 294-19.00R.

Slanker, Steven R., to Nalco Chemical Company. Synthetic drawing and ironing lubricant. 4,260,502, Cl. 252-49.500.

Slavens, Clyde M.; and Clavin, Edward A., to Midcon Pipeline Equipment Co. Traveling welding carriage. 4,260,869, Cl. 219-124.310.

Slawny, Howard J.: *See*—
Lindsay, William F.; Meintrup, Robert A.; and Slawny, Howard J., 4,260,443, Cl. 156-220.000.

Slaybaugh, Ann G. Kit for clipping sorting and redeeming coupons. 4,260,055, Cl. 206-232.000.

Sleighter, George E., to PPG Industries, Inc. Pyrometer assembly having a heated viewing tube. 4,259,866, Cl. 73-355.00R.

Sliwka, Wolfgang, to BASF Aktiengesellschaft. Process for hardening microcapsules. 4,260,515, Cl. 252-316.000.

Sloan, Kenneth B.: *See*—
Stella, Valentino J.; and Sloan, Kenneth B., 4,260,769, Cl. 548-112.000.

Smart, David C., to Eastman Kodak Company. Apparatus for measuring illuminance. 4,260,256, Cl. 356-235.000.

Smith, Arnold R., to Bell Telephone Laboratories, Incorporated. Built-in cable shield bonding system. 4,260,851, Cl. 174-107.000.

Smith, Christine: *See*—
Schmidt, William K.; Smith, Christine; Smith, Dewey H., Jr.; and Vernier, Vernon G., 4,260,629, Cl. 424-274.000.

Smith, David W.: *See*—
Russell, John N.; Smith, David W.; and McMullen, Joseph C., 4,259,837, Cl. 60-39.550.

Smith, Dewey H., Jr.: *See*—
Schmidt, William K.; Smith, Christine; Smith, Dewey H., Jr.; and Vernier, Vernon G., 4,260,629, Cl. 424-274.000.

Smith International, Inc.: *See*—
Crase, Gary M.; and Trzeciak, Kurt M., 4,260,202, Cl. 308-8.200.
Garner, Lloyd L., 4,260,203, Cl. 308-8.200.

Smith, John L.; and Whitlock, Bruce N., to Princeton Applied Research Corporation. Static drop mercury electrode. 4,260,467, Cl. 204-195.00H.

Smith Kline & French Laboratories Limited: *See*—
Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R., 4,260,744, Cl. 544-8.000.

Smith, Leslie H., to Imperial Chemical Industries Limited. Alkanolamine derivatives. 4,260,632, Cl. 424-285.000.

Smith, Merrill M.: *See*—
Hanson, John G.; and Smith, Merrill M., 4,260,534, Cl. 260-31.80R.

Smith, Phillip H. Method of manufacturing a clad product. 4,260,095, Cl. 228-130.000.

Smith, Robert C. Device for coating paper. 4,259,924, Cl. 118-706.000.

Smith, Robert C., to International Business Machines Corporation. Apparatus for sensing non-coded images. 4,260,979, Cl. 340-146.30H.

Smith, Ronald W. Cabinet. 4,260,206, Cl. 312-100.000.

Smith, Samuel: *See*—
Schultz, William J.; and Smith, Samuel, 4,260,702, Cl. 525-334.000.

Smith, Terrence M.: *See*—
Steddum, Riddle E.; Nezames, Theodore H.; Smith, Terrence M.; and Crager, Bruce L., 4,260,292, Cl. 405-217.000.

Smiths Industries Limited: *See*—
Myers, Ronald V., 4,259,865, Cl. 73-304.00C.

Smulders, Herman A. G. S.: *See*—
Kuus, Gijsbert; de Vaan, Robertus L. C.; Jacobs, Cornelis A. J.; and Smulders, Herman A. G. S., 4,260,934, Cl. 315-326.000.

Societe Anonyme Francaise du Ferodo: *See*—
Beccaris, Carlo, 4,260,048, Cl. 192-107.00C.

Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques: *See*—
Lhonore, Pierre; Quibel, Jacques; and Jacquinot, Bernard, 4,260,838, Cl. 568-947.000.

Societe de Fabrication d'Instruments de Mesure S.F.I.M.: *See*—
Kerhoas, Jean-Claude; and Cattan, Gilles, 4,259,871, Cl. 74-5.460.
Societe de Paris et du Rohne: *See*—
Mazzorana, Alfred B., 4,260,903, Cl. 290-48.000.
Societe d'Optique, Precision Electronique et al Mecanique-SOPELEM: *See*—
Letort, C. A.; Llop, Helenio; and Grandjacques, B., 4,260,260, Cl. 356-385.000.
Societe Elpalux: *See*—
Jarret, Jean; and Jarret, Jacques, 4,260,926, Cl. 310-254.000.
Societe Generale de Constructions Electriques et Mecaniques Alsthom S.A.: *See*—
Condolios, Elie, 4,260,488, Cl. 210-259.000.
Societe Lignes Telegraphiques et Telephoniques: *See*—
Dachert, Francois; Gelin, Jean; and Ropars, Raymond, 4,260,991, Cl. 343-756.000.
Societe Nationale D'Etude et de Construction de Moteurs D'Aviation: *See*—
Bayle Laboure, Gerard J. P.; Buisson, Marc F. B.; and Vandenbroucke, Roger A. J., 4,259,839, Cl. 60-261.000.
Societe Nationale Elf Aquitaine (Production): *See*—
Moinard, Michel, 4,260,289, Cl. 405-169.000.
Societe Sacilor, Acieries et Laminoirs de Lorraine: *See*—
Brulhet, Paul, 4,260,563, Cl. 261-23.00R.
Sokolovsky, Felix P.: *See*—
Belyanin, Petr N.; Frolov, Konstantin V.; Kobrinsky, Aron E.; Korendyasev, Alfred I.; Rozin, Boris S.; Salamandra, Boris L.; Sokolovsky, Felix P.; Stolin, Jury V.; and Tyves, Leonid I., 4,259,876, Cl. 74-469.000.
Solvay & Cie.: *See*—
Verlaeten, Jean; and Preumont, Maurice, 4,260,594, Cl. 423-421.000.
Somekh, George S.: *See*—
Vidueira, Jose A.; Forte, Paulino; and Somekh, George S., 4,260,476, Cl. 208-321.000.
Sommer, Werner: *See*—
Thamm, Horst-Dieter; Knittel, Volker; Sommer, Werner; and Weckler, Gerhard, 4,260,422, Cl. 106-111.000.
Sonenstein, Gerard G.; and Kaeser, James A., to Colgate-Palmolive Company. Fastening means for diapers. 4,259,957, Cl. 128-287.000.
Sony Corporation: *See*—
Hongu, Masayuki; and Tokuhara, Masaharu, 4,261,016, Cl. 358-195.100.
Isono, Katsuo; and Imayasu, Tomoyoshi, 4,261,010, Cl. 358-67.000.
Sound-Source International: *See*—
Frank, Reinhard, 4,260,161, Cl. 369-58.000.
Sowa, Armin: *See*—
Blindow, Friedrich-Karl; Decker, Jurgen; Kluibenschedl, Heinrich; Munding, German; Sowa, Armin; and Wagner, Harald, 4,260,194, Cl. 299-11.000.
Spaccapaniccia, Domenico. Support for drying hair. 4,259,972, Cl. 132-9.000.
Spear, Gilmore M.: *See*—
Ryan, Arthur B.; and Spear, Gilmore M., 4,260,299, Cl. 407-115.000.
Specht, Ludwig: *See*—
Berthel, Karl; Schmid, Olaf; Walter, Berthold; Specht, Ludwig; Sturm, Theodor; and Degel, Hans-Peter, 4,260,973, Cl. 335-133.000.
Speer, Lawrence L., to Repair-It Industries, Inc. Apparatus and method for repairing plastic materials. 4,260,439, Cl. 156-98.000.
Sperry Corporation: *See*—
Strubbe, Gilbert J. I., 4,259,829, Cl. 56-10.200.
Spies, Alfons, to Dr. Johannes Heidenhain GmbH. Gas bearing. 4,260,205, Cl. 308-9.000.
Sprecker, Mark A.; Vock, Manfred H.; Schmitt, Frederick L.; Vinals, Joaquin; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Acetyl hydrindacenes, acetyl indanes, mixtures of same, processes for preparing same and organoleptic uses thereof. 4,260,511, Cl. 252-174.110.
Squires, John J.: *See*—
Galatha, Matthew J.; Rohrer, Gene D.; and Squires, John J., 4,260,879, Cl. 235-449.000.
Stack, James B., to International Business Machines Corporation. Contamination prevention system. 4,260,235, Cl. 355-3.0CH.
Stahnke, Manfred: *See*—
Kerb, Ulrich; Stahnke, Manfred; and Wiechert, Rudolf, 4,260,464, Cl. 204-158.0HA.
Staiger, Gerhard; Jaggard, James F. R.; and Schneider, Paul, to BASF Aktiengesellschaft. Process for the preparation of homopolymers and copolymers of α-monoolefins. 4,260,710, Cl. 526-142.000.
Stamm, Edward I.: *See*—
Koshoffer, John M.; Ekstedt, Edward E.; and Stamm, Edward I., 4,259,842, Cl. 60-757.000.
Stampfli, Jean-Marcel, to Ebauches Electroniques SA. Electronic watch having a stepping motor equipped with an alarm system. 4,261,050, Cl. 368-259.000.
Standard Oil Company (Indiana): *See*—
Connolly, John F., 4,260,484, Cl. 252-411.00R.
Cratin, John R., Jr., 4,260,363, Cl. 431-76.000.
Hanses, Mark J., 4,260,311, Cl. 414-129.000.
Poppe, Wassily; Craddock, Charles F.; Gutekunst, Robert W.; Ladd, Robert G.; and Mager, Sue A., 4,260,567, Cl. 264-25.000.
Schroeder, Hobe; and Thomka, Donald E., 4,260,546, Cl. 260-346.760.
Standard Products Company, The: *See*—
Zoller, Robert A., 4,260,655, Cl. 428-31.000.
Stark, Carroll, to Anemostat Products Division, Dynamics Corporation of America. Tamper-proof window unit. 4,259,818, Cl. 52-208.000.
Starr, Gilbert, to Medtek Corporation. Method and apparatus for controlling a microprocessor-based system. 4,261,041, Cl. 364-571.000.
START S.p.A. - Studi Apparecchiature Ricercne Techniche: *See*—
Fasano, Osvaldo, 4,260,049, Cl. 192-111.00A.
Stauffer Chemical Company: *See*—
Benjamin, Robert E.; and Edging, Thomas E., 4,260,591, Cl. 423-267.000.
Gaughan, Edmund J., 4,260,824, Cl. 564-42.000.
Via, Francis A., 4,260,465, Cl. 204-159.230.
Staut, Ronald: *See*—
Brodmann, Franz J.; and Staut, Ronald, 4,260,872, Cl. 219-270.000.
Steddum, Riddle E.; Nezames, Theodore H.; Smith, Terrence M.; and Crager, Bruce L., to Offshore Company, The. Arctic offshore platform. 4,260,292, Cl. 405-217.000.
Steigenberger, Richard: *See*—
Hirt, Dieter; and Steigenberger, Richard, 4,260,204, Cl. 308-9.000.
Steiger, Bruce W., to Hydra-Mac, Inc. Safety device for a front end type loader vehicle. 4,260,320, Cl. 414-680.000.
Steinbrecher, Lester: *See*—
Cassidy, John D.; and Steinbrecher, Lester, 4,260,491, Cl. 210-720.000.
Steinmetz, Gunter: *See*—
Feistkorn, Jochen; Pohlmann, Edgar; Rothmayer, Walter; Schwarzler, Peter; Steinmetz, Gunter; and Zander, Peter, 4,259,908, Cl. 104-281.000.
Stella, Valentino J.; and Sloan, Kenneth B., to INTERx Research Corporation. 5,5-Diphenylhydantoins. 4,260,769, Cl. 548-112.000.
Stelzer, Karl-Heinz: *See*—
Buchert, Dieter; and Stelzer, Karl-Heinz, 4,260,353, Cl. 425-224.000.
Stencel, Edgar L., to VSI Corporation. Self-locking fastener, fastener system, and process. 4,260,005, Cl. 411-3.000.
Stern, Richard M.: *See*—
Scherrer, Robert A.; and Stern, Richard M., 4,260,547, Cl. 260-346.710.
Stewart, Dorothy M., executrix: *See*—
Holritz, Robert F.; and Stewart, Robert C., deceased, 4,260,318, Cl. 414-589.000.
Stewart, Robert C., deceased: *See*—
Holritz, Robert F.; and Stewart, Robert C., deceased, 4,260,318, Cl. 414-589.000.
Stiefel, Christian; and Jansen, Harry, to Ringfeder G.m.b.H. Arrangement for resilient absorption of forces. 4,260,142, Cl. 267-9.00A.
Stocks, Richard A.; and Twell, David, to Hestair Farm Equipment Limited. Agricultural dispensing mechanism. 4,259,912, Cl. 111-77.000.
Stohlquist, Roger H., to Anderson Bros. Mfg. Co. Packaging apparatus. 4,259,827, Cl. 53-564.000.
Stokes, William E.: *See*—
Jerke, Marlyn L.; Stokes, William E.; and Wolf, David L., 4,259,831, Cl. 56-98.000.
Stolin, Jury V.: *See*—
Belyanin, Petr N.; Frolov, Konstantin V.; Kobrinsky, Aron E.; Korendyasev, Alfred I.; Rozin, Boris S.; Salamandra, Boris L.; Sokolovsky, Felix P.; Stolin, Jury V.; and Tyves, Leonid I., 4,259,876, Cl. 74-469.000.
Stork, Gilbert: *See*—
Wilson, Richard A.; Mookherjee, Braja D.; Hall, John B.; and Stork, Gilbert, 4,260,830, Cl. 568-485.000.
Stork, Karl: *See*—
Perner, Johannes; Stork, Karl; and Oppenlaender, Knut, 4,260,724, Cl. 526-229.000.
Stover, Dennis E., to Atlantic Richfield Company. Method for the renovation of an aquifer. 4,260,193, Cl. 299-5.000.
Stratmann, Josef; and Strobel, Manfred, to Carl Still, Firma. Device for quenching glowing coke. 4,260,460, Cl. 202-227.000.
Strauss, Willard R., to Honeywell Inc. Slide wire assembly. 4,260,995, Cl. 346-32.000.
Strobel, Manfred: *See*—
Stratmann, Josef; and Strobel, Manfred, 4,260,460, Cl. 202-227.000.
Strohmaier, Ernst: *See*—
Eibofner, Eugen; and Strohmaier, Ernst, 4,260,381, Cl. 433-126.000.
Stroo, Christiaan A., to Technisch Handels-en Adviesbureau van Geffen B.V. Method of interconnecting several parts, such as a piece of tubing and a plate, a tube or similar body. 4,260,094, Cl. 228-112.000.
Strubbe, Gilbert J. I., to Sperry Corporation. Combine harvesters. 4,259,829, Cl. 56-10.200.
Structural Composite Industries, Inc.: *See*—
Weingart, Oscar; and Morris, Edgar E., 4,260,332, Cl. 416-226.000.
Strunk, Richard J.; Hubbard, Winchester L.; and Grahame, Robert E., Jr., to Uniroyal, Inc. Tetrasubstituted organotin compounds. 4,260,552, Cl. 260-429.700.
Studiengesellschaft Kohle MBH: *See*—
Zosel, Kurt, 4,260,639, Cl. 426-478.000.
Sturm, Theodor: *See*—
Berthel, Karl; Schmid, Olaf; Walter, Berthold; Specht, Ludwig; Sturm, Theodor; and Degel, Hans-Peter, 4,260,973, Cl. 335-133.000.
Sturman, Martin G.: *See*—
Pilipski, Mark, 4,260,685, Cl. 435-161.000.

Sturtevant, Robert L.: *See*—
Karsay, Bela I.; Sturtevant, Robert L.; and Gancy, Alan B., 4,260,846, Cl. 585-730.000.
Styles, Virgil L.: *See*—
Morrison, Robert W., Jr.; Mallory, William R.; and Styles, Virgil L., 4,260,758, Cl. 544-262.000.
Su, Tien-Kuei: *See*—
Kluger, Edward W.; Su, Tien-Kuei; and Thompson, Teresa J., 4,260,556, Cl. 260-465.50R.
Suarez, Humberto. Locomotive engine coolant filter. 4,260,012, Cl. 165-51.000.
Sudbury Systems Incorporated: *See*—
Kolodny, Gerald M.; and Hughes, Paul R., 4,260,854, Cl. 179-6.090.
Sudo, Eiichi: *See*—
Nakamura, Masazo; Sudo, Eiichi; and Urata, Kiyoshi, 4,260,127, Cl. 249-207.000.
Sugar, John W.: *See*—
Moss, Jack R.; Sugar, John W.; Riemer, Ronald A.; Frick, Charles E.; and Dillon, Ronald D., 4,260,490, Cl. 210-620.000.
Suld, George: *See*—
Lyons, James E.; Suld, George; and Shinn, Robert W., 4,260,808, Cl. 560-131.000.
Sullivan, Donald F. Photoprinting plate and method of preparing printed circuit board solder masks therewith. 4,260,675, Cl. 430-315.000.
Sumida, Seizo: *See*—
Yoshida, Ryo; Takemoto, Ichiki; Sumida, Seizo; and Kamoshita, Katsuzo, 4,260,411, Cl. 71-88.000.
Sumitomo Aluminium Smelting Company, Limited: *See*—
Yamada, Koichi; Nakazato, Kunio; Horinouchi, Kazuo; Hamano, Seiichi; and Mouri, Masahide, 4,260,524, Cl. 252-463.000.
Sumitomo Chemical Company, Limited: *See*—
Atsumi, Toshio; Takebayashi, Yoshiaki; Tarumi, Yuzo; and Yamamoto, Hisao, 4,260,774, Cl. 548-336.000.
Matsushima, Shunsuke; Hata, Kazuhiko; Mashita, Kentaro; Kanagawa, Shuichi; Nakao, Shinji; Nakai, Kiyoshi; and Kamio, Kunimasa, 4,260,831, Cl. 568-719.000.
Yoshida, Ryo; Takemoto, Ichiki; Sumida, Seizo; and Kamoshita, Katsuzo, 4,260,411, Cl. 71-88.000.
Sumitomo Electric Industries, Ltd.: *See*—
Takata, Koji, 4,260,196, Cl. 303-6.00C.
Sumitomo, Hiroyuki, to Hisaka Works, Limited. Plate type heat exchanger. 4,260,013, Cl. 165-75.000.
Summers, Frank V.; Meissner, David C.; and Scarlett, John C., to Midrex Corporation. Method of producing direct reduced iron with fluid bed coal gasification. 4,260,412, Cl. 75-35.000.
Summit Licensing Company: *See*—
Troll, John H., 4,259,806, Cl. 46-44.000.
Summit Packaging Systems, Inc.: *See*—
Gailitis, Adolph R., 4,260,080, Cl. 222-402.140.
Sun, Kai C. K., to Xerox Corporation. Master-slave power amplifiers. 4,260,936, Cl. 318-66.000.
Suntech, Inc.: *See*—
Lyons, James E.; Suld, George; and Shinn, Robert W., 4,260,808, Cl. 560-131.000.
Superior Electric Company, The: *See*—
Lundin, Robert S.; and Hathway, Randal B., 4,260,917, Cl. 310-71.000.
Sutton, David L.: *See*—
Rao, Prabhakar P.; and Sutton, David L., 4,259,868, Cl. 73-597.000.
Suzuki, Atsushi: *See*—
Harada, Masato; Ishigaki, Yoshikatsu; Yamada, Sadahiko; Suzuki, Atsushi; Masuda, Jun; Hamazaki, Tadamitsu; Yoshida, Toshiaki; and Fukuda, Kiyoto, 4,260,723, Cl. 526-115.000.
Suzuki, Gyoichi; Ando, Ryo; Koyama, Tatsuo; Kubodera, Shoji; and Kondo, Renichi, to Nippon Kokan Kabushiki Kaisha. Process for recovering and utilizing useful substances from molten metal produced during reduction treatment of steel slag. 4,260,414, Cl. 75-60.000.
Suzuki, Nobuo: *See*—
Matsui, Kenichi; and Suzuki, Nobuo, 4,260,900, Cl. 250-578.000.
Suzuki, Ryoichi, to Canon Kabushiki Kaisha. Charge device for secondary batteries. 4,260,230, Cl. 354-76.000.
Svenska Institutet for Konserveringsforskning: *See*—
Eriksson, Caj. E. A.; and Tjelle, Svein, 4,260,644, Cl. 426-656.000.
Sybron Corporation: *See*—
Groves, William A.; and Lentine, Frank N., 4,260,379, Cl. 433-102.000.
Sykora, Stanislav: *See*—
Kolinsky, Miloslav; Macho, Vendelin; Porubsky, Juraj; Kuska, Vladislav; Manas, Jaroslav; Sykora, Stanislav; and Lukas, Rudolf, 4,260,541, Cl. 260-45.8NT.
Sylvester, Gerd; Witte, Josef; and Marwede, Gunter, to Bayer Aktiengesellschaft. Solution polymerization of conjugated dienes. 4,260,707, Cl. 526-114.000.
Symens, Ronald E.: *See*—
Osborn, William E.; and Symens, Ronald E., 4,260,889, Cl. 250-358.00T.
Syntex (U.S.A.) Inc.: *See*—
Nash, John E., 4,260,380, Cl. 433-119.000.
Systemkiki Co., Ltd.: *See*—
Kawamura, Michio; Kato, Takeshi; Ohira, Kouji; Nishimura, Katsusuke; and Mitsui, Kazuaki, 4,260,878, Cl. 235-92.0AC.
Szalai, Gabor; Albrecht, Laszlo; and Szij, Peter, to Magyar Vagon- Es Gepgyar. Expander for internal shoe drum brakes. 4,260,042, Cl. 188-330.000.
Szende, Bela: *See*—
Lapis, Karoly; Szende, Bela; Jeney, Andreas; Kopper, Laszlo; Simon, Karoly; Tyihak, Erno; Kisfaludy, Lajos; Kovacs, Lajos; and Dobo, Gyorgy, 4,260,595, Cl. 424-10.000.
Szij, Peter: *See*—
Szalai, Gabor; Albrecht, Laszlo; and Szij, Peter, 4,260,042, Cl. 188-330.000.
Szostak, Jan, to Singer Company, The. Treadle drive for electrified sewing machine. 4,259,915, Cl. 112-217.400.
Szuts, Tamas: *See*—
Hermecz, Istvan; Meszaros, Zoltan; Breining, Tibor; Virag, Sandor; Vasvari nee Debreczi, Lelle; Horvath, Agnes; Nagy, Gabor; Mandi, Attila; Szuts, Tamas; Bitteer, Istvan; and Sebestyen, Gyula, 4,260,612, Cl. 424-251.000.
Tabak, Samuel A.: *See*—
Holland, Robert E.; and Tabak, Samuel A., 4,260,841, Cl. 585-319.000.
Tabet, Michael A. Weight for a ball bat. 4,260,150, Cl. 273-26.00B.
Tabuchi, Katsuhiko: *See*—
Fukuda, Kotaro; Okamoto, Yosinori; Shimada, Masakatsu; Kato, Toshiaki; Tabuchi, Katsuhiko; Shimura, Makoto; and Fujiwara, Takashi, 4,259,965, Cl. 128-640.000.
Tada, Hiroshi, to Oiles Industry Co. Ltd. Concrete bridge girder support structure and cantilever erection method using same. 4,259,759, Cl. 14-16.100.
Taesler, Paul F.; and Townsend, John H., to United States of America, Navy. Protective communications helmet. 4,259,747, Cl. 2-6.000.
Tag Radionics Limited: *See*—
Falck, John B.; Glanvill, Keith B.; and Reid, John N., 4,260,983, Cl. 340-572.000.
Taguchi, Sadanori: *See*—
Aida, Toshiyuki; Taguchi, Sadanori; Yuito, Isamu; Kawabe, Ushio; Yamamoto, Shigehiko; Honda, Yukio; Shibata, Norio; and Okano, Hiroshi, 4,260,665, Cl. 428-633.000.
Takahashi, Fujio: *See*—
Hayashi, Kazuo; and Takahashi, Fujio, 4,259,896, Cl. 98-2.030.
Takahashi, Haruo: *See*—
Kurihara, Mamoru; Ezaki, Kiyoshi; and Takahashi, Haruo, 4,260,285, Cl. 405-68.000.
Takama, Eiichi: *See*—
Mizoguchi, Naoji; Takama, Eiichi; and Kaneko, Kazuo, 4,260,424, Cl. 106-309.000.
Takano, Hideo; Shimohori, Yukio; and Fukuda, Shigeho, to Hitachi Cables, Ltd. Apparatus for producing foamed plastic insulated wires. 4,260,351, Cl. 425-113.000.
Takata, Koji, to Sumitomo Electric Industries, Ltd. Brake pressure control valve with double split point. 4,260,196, Cl. 303-6.00C.
Takayama, Masaji, to Kabushiki Kaisha Suwa Seikosha. Multi-layer liquid crystal panel. 4,260,224, Cl. 350-335.000.
Takayoshi Narisue: *See*—
Yasuoka, Yoshio, 4,260,577, Cl. 264-280.000.
Takebayashi, Yoshiaki: *See*—
Atsumi, Toshio; Takebayashi, Yoshiaki; Tarumi, Yuzo; and Yamamoto, Hisao, 4,260,774, Cl. 548-336.000.
Takeda Chemical Industries, Ltd.: *See*—
Kakeya, Nobuharu; and Yoshimura, Yoshinobu, 4,260,607, Cl. 424-246.000.
Miyashita, Osamu; and Akimoto, Hiroshi, 4,260,608, Cl. 424-248.540.
Okazaki, Hisayoshi; Kanamaru, Tsuneo; and Ohta, Kazuhiko, 4,260,599, Cl. 424-122.000.
Takemoto, Ichiki: *See*—
Yoshida, Ryo; Takemoto, Ichiki; Sumida, Seizo; and Kamoshita, Katsuzo, 4,260,411, Cl. 71-88.000.
Takenoya, Hideaki; and Makabe, Hachiro, to Janome Sewing Machine Co. Ltd. Electronic pattern control sewing machine. 4,259,913, Cl. 112-158.00E.
Taketani, Yutaka; Hayashi, Yuzuru; Kawaguchi, Takeyuki; Ono, Tomoyoshi; and Mori, Ko, to Teijin Limited. Preparation of permselective composite membrane. 4,260,652, Cl. 427-245.000.
Taleisnik, Julio. Endoprosthetic wrist joint. 4,259,752, Cl. 3-1.910.
Talos Systems, Inc.: *See*—
Fencl, George A., 4,260,852, Cl. 178-19.000.
Tamburini, Primo, to Organisation Europeenne de Recherches Spatiales. Surface condenser. 4,260,015, Cl. 165-110.000.
Tamura, Humio: *See*—
Asano, Kiro; Tamura, Humio; Tanaka, Hiromitsu; and Enomotol, Satoru, 4,260,736, Cl. 536-5.000.
Tanaka, Hiromitsu: *See*—
Asano, Kiro; Tamura, Humio; Tanaka, Hiromitsu; and Enomotol, Satoru, 4,260,736, Cl. 536-5.000.
Tanaka, Mitsuo: *See*—
Onoda, Seiichi; Yamada, Shoji; Minai, Yasuo; Maeda, Minoru; Kita, Shin; and Tanaka, Mitsuo, 4,260,883, Cl. 250-226.000.
Tanaka, Motoaki; Miyagawa, Tsutomu; and Nakata, Takashi, to Wako Pure Chemical Industries, Ltd. Process for producing water-soluble polymers. 4,260,713, Cl. 526-215.000.
Tanigawa, Takeshi: *See*—
Yamauchi, Yukio; and Tanigawa, Takeshi, 4,260,981, Cl. 340-870.110.
Tarumi, Yuzo: *See*—
Atsumi, Toshio; Takebayashi, Yoshiaki; Tarumi, Yuzo; and Yamamoto, Hisao, 4,260,774, Cl. 548-336.000.
Tatano, Toshio: *See*—
Tsuda, Mitsuru; and Tatano, Toshio, 4,260,679, Cl. 435-10.000.

Tatemoto, Masayoshi; Tomoda, Masayasu; and Ueta, Yutaka, to Daikin Kogyo Co., Ltd. Co-crosslinkable blend composition comprising iodine-containing fluoroelastomer. 4,260,698, Cl. 525-102.000.

Tateoka, Kiyoshi: *See*—
Ando, Hiromi; Tateoka, Kiyoshi; and Hayashida, Yoshihiro, 4,259,893, Cl. 91-369.00B.

Tavoni, Gian P., to Centro Ricerche Fiat S.p.A. Weather monitoring apparatus. 4,259,864, Cl. 73-170.00R.

Taylor, Andrew W.; Burton, George; and Clayton, John P., to Beecham Group Limited. Chemical intermediates useful to prepare cephalosporins. 4,260,746, Cl. 544-021.000.

Taylor, David L., to Harris Corporation. Fabrication of moat resistor ram cell utilizing polycrystalline deposition and etching. 4,260,436, Cl. 148-174.000.

Taylor, Doris B.: *See*—
Jacobson, Walter E.; Kronish, Donald P.; Taylor, Doris B.; and Young, William D., 4,260,687, Cl. 435-301.000.

Taylor, Glenn N., to Kendall Company, The. Catheter with non-adhering balloon. 4,259,960, Cl. 128-349.00B.

TDK Electronics Co., Inc.: *See*—
Nakamura, Kiichi; and Iwata, Takashi, 4,260,965, Cl. 333-81.00A.

TDK Electronics Co., Ltd.: *See*—
Fukuda, Kotaro; Okamoto, Yosinori; Shimada, Masakatsu; Kato, Toshiaki; Tabuchi, Katsuhiko; Shimura, Makoto; and Fujiwara, Takashi, 4,259,965, Cl. 128-640.000.

Technicon Instruments Corporation: *See*—
Lee, Martin J., 4,260,392, Cl. 23-230.00R.

Technisch Handels-en Adviesbureau van Geffen B.V.: *See*—
Stroo, Christiaan A., 4,260,094, Cl. 228-112.000.

Technology Resources, Inc.: *See*—
Gibson, Jacob J., 4,260,393, Cl. 23-230.00B.

Teijin Limited: *See*—
Taketani, Yutaka; Hayashi, Yuzuru; Kawaguchi, Takeyuki; Ono, Tomoyoshi; and Mori, Ko, 4,260,652, Cl. 427-245.000.

Tektronix, Inc.: *See*—
Ulrich, Ralph P.; and Hewitt, Deborah W., 4,260,425, Cl. 134-2.000.

Telefonaktiebolaget L M Ericsson: *See*—
Persson, Mats A.; and Lovdin, Arne L., 4,261,052, Cl. 370-59.000.

Teletype Corporation: *See*—
Thomas, James W., Jr., 4,260,952, Cl. 329-104.000.

Telex Computer Products, Inc.: *See*—
Kirby, Robert E., 4,260,849, Cl. 174-51.000.
Winebarger, Joseph P., 4,260,907, Cl. 307-264.000.

Tempetro International Limited: *See*—
Elliott, Kevin J., 4,259,937, Cl. 123-557.000.

Temple, Victor A. K., to General Electric Company. High voltage semiconductor device having an improved dv/dt capability. 4,261,000, Cl. 357-38.000.

Temple, Victor A. K., to General Electric Company. Partially isolated amplifying gate thyristor with controllable dv/dt compensation, high di/dt capability, and high sensitivity. 4,261,001, Cl. 357-38.000.

Tenney, Stephen M., to United States of America, Army. Fluidic waste gate. 4,259,840, Cl. 60-602.000.

Terai, Kazuo; and Nagase, Takeshi, to Yamaha Hatsudoki Kabushiki Kaisha. Motorcycle having a leading axle type front fork assembly. 4,260,170, Cl. 280-276.000.

Terrell Machine Company, The: *See*—
Terrell, Robert E., 4,259,770, Cl. 28-294.000.

Terrell, Robert E., to Terrell Machine Company, The. Apparatus for removing roving or the like from textile bobbins or the like. 4,259,770, Cl. 28-294.000.

Tessler, Martin M., to National Starch and Chemical Corporation. Novel starch ether derivatives, a method for the preparation thereof. 4,260,738, Cl. 536-49.000.

Texaco Development Corp.: *See*—
Knifton, John F., 4,260,820, Cl. 562-517.000.

Texaco Inc.: *See*—
Calderon, Reynaldo, 4,260,016, Cl. 166-74.000.
Fein, Richard S.; and Powers, Charles T., 4,260,499, Cl. 252-32.500.
McCarthy, Robert R.; and Lipinski, John J., 4,260,068, Cl. 220-221.000.
McGahey, Dean C.; and Vest, Eugene W., 4,260,000, Cl. 141-59.000.
Shum, Yick-Mow; and Huang, Wann-Sheng, 4,260,018, Cl. 166-272.000.

Texas Instruments Incorporated: *See*—
Closson, Thomas A.; Oxford, David B.; Schenck, Stephen R.; and Seitchik, Jerold A., 4,261,044, Cl. 365-8.000.
Colman, Derek, 4,260,910, Cl. 307-303.000.
Mings, Joe D.; and Torreno, Manuel L., Jr., 4,260,908, Cl. 307-270.000.
Orcutt, John W., 4,260,862, Cl. 200-81.00R.

Th. Kieserling & Albrecht: *See*—
Hartkopf, Heinz; and Lomberg, Ulrich, 4,259,884, Cl. 82-1.500.

Thamm, Horst-Dieter; Knittel, Volker; Sommer, Werner; and Weckler, Gerhard, to Hoechst Aktiengesellschaft. Novel phosphonocarboxylic acid compounds. 4,260,422, Cl. 106-111.000.

Theissig, Werner, to Hilti Aktiengesellschaft. Electric motor driven hand-held drill. 4,260,916, Cl. 310-50.000.

Thermacore, Inc.: *See*—
Roehm, Vincent P., 4,259,946, Cl. 126-443.000.

Thew, Donald G.; and Gehrig, Lane, to Koss Corporation. Method for molding ear cushions. 4,260,575, Cl. 264-154.000.

Thoma, Georg, to Sanried Fr. Sander & Riedmaier GmbH & Co. Apparatus for punching symbols into template material. 4,260,102, Cl. 234-112.000.

Thomas & Betts Corporation: *See*—
Greenwood, William S., 4,259,778, Cl. 29-560.000.

Thomas, Delbert C., Jr.: *See*—
Baker, Gregory N.; Bateson, John E.; Brown, Earl T.; Delgado, Hortensia E.; Siegl, Ludwig R.; and Thomas, Delbert C., Jr., 4,261,039, Cl. 364-519.000.

Thomas, James L., to FMC Corporation. Kiln tar binder and method of producing it. 4,260,423, Cl. 106-273.00R.

Thomas, James W., Jr., to Teletype Corporation. Circuit for decoding a diphase signal. 4,260,952, Cl. 329-104.000.

Thomas, John C., to Universal Research and Development Corp. Steam engine. 4,259,841, Cl. 60-669.000.

Thomas, Robert J., to Key Tronic Corporation. Optical character scanner. 4,260,880, Cl. 235-454.000.

Thomka, Donald E.: *See*—
Schroeder, Hobe; and Thomka, Donald E., 4,260,546, Cl. 260-346.760.

Thompson, David T.; Bird, Alfred J.; and Pearson, Edward J., to Johnson, Matthey & Co., Limited. Process for the purification of terephthalic acid. 4,260,817, Cl. 562-487.000.

Thompson, Earl C.; Keller, Morris C.; and Rustin, Francis, to Thompson, Earl Clayton. Animal watering valve with protected biasing spring. 4,260,133, Cl. 251-339.000.

Thompson, Earl Clayton: *See*—
Thompson, Earl C.; Keller, Morris C.; and Rustin, Francis, 4,260,133, Cl. 251-339.000.

Thompson, Quentin E.: *See*—
Munch, Ralph H.; and Thompson, Quentin E., 4,260,506, Cl. 252-78.100.

Thompson, Teresa J.: *See*—
Kluger, Edward W.; Su, Tien-Kuei; and Thompson, Teresa J., 4,260,556, Cl. 260-465.50R.

Thomson-CSF: *See*—
Aubry, Claude; and Renaud, Daniel, 4,260,993, Cl. 343-779.000.

Thomson, Lois J.: *See*—
Crawford, Lynn D., 4,259,780, Cl. 29-808.000.

Thomson, Loronzo H. Air turbine dental handpieces and swivel connections therefor. 4,260,382, Cl. 433-126.000.

Threat, J. B.: *See*—
Harman, James R.; Larson, William M.; and Threat, J. B., 4,260,136, Cl. 254-380.000.

TIE/Communications, Inc.: *See*—
Shinoi, Tsuyoshi; and Oshima, Setsuo, 4,260,857, Cl. 179-99.00R.

Titeflex Corporation: *See*—
Lalikos, James M.; Gazda, Chester T.; and O'Melia, Lawrence, 4,259,989, Cl. 138-109.000.

Tito, Kostag V. Valve actuators and combined valves and actuators. 4,260,128, Cl. 251-58.000.

Titus, Theodore, IV, to Lanier Business Products, Inc. Cassette labeling apparatus. 4,261,021, Cl. 360-79.000.

Tjelle, Svein: *See*—
Eriksson, Caj. E. A.; and Tjelle, Svein, 4,260,644, Cl. 426-656.000.

Tokico Ltd.: *See*—
Ando, Hiromi; Tateoka, Kiyoshi; and Hayashida, Yoshihiro, 4,259,893, Cl. 91-369.00B.

Toko, Inc.: *See*—
Yoshioka, Fumio, 4,260,999, Cl. 357-34.000.

Tokuda, Kiyonori: *See*—
Kametaka, Norio; Marumo, Kuniomi; Tokuda, Kiyonori; and Sekiguchi, Kazuo, 4,260,813, Cl. 560-234.000.

Tokuhara, Masaharu: *See*—
Hongu, Masayuki; and Tokuhara, Masaharu, 4,261,016, Cl. 358-195.100.

Tokumaru, Yukuya; and Nakai, Masanori, to Tokyo Shibaura Electric Co., Ltd. Semiconductor device and logic circuit constituted by the semiconductor device. 4,260,906, Cl. 307-477.000.

Tokyo Magnetic Printing Company, Ltd.: *See*—
Hayashi, Hideaki, 4,261,023, Cl. 360-94.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Matsui, Kenichi; and Suzuki, Nobuo, 4,260,900, Cl. 250-578.000.
Okado, Chihiro, 4,260,948, Cl. 323-241.000.

Tokyo Shibaura Electric Co., Ltd.: *See*—
Tokumaru, Yukuya; and Nakai, Masanori, 4,260,906, Cl. 307-477.000.

Tomimoto, Tetsuo; Nagaoka, Yoshitomi; and Sasaki, Reiichi, to Matsushita Electric Industrial Co., Ltd. Wireless Research Laboratory. VIR Control of hue and saturation in RGB demodulator. 4,261,009, Cl. 358-27.000.

Tomoda, Masayasu: *See*—
Tatemoto, Masayoshi; Tomoda, Masayasu; and Ueta, Yutaka, 4,260,698, Cl. 525-102.000.

Tomosada, Masahiro: *See*—
Honma, Toshio; Furuichi, Katsushi; Murakami, Katsumi; and Tomosada, Masahiro, 4,260,241, Cl. 355-14.00R.

Tomy Kogyo Co., Inc.: *See*—
Nishimiya, Toru, 4,260,153, Cl. 273-89.000.

Toray Industries, Inc.: *See*—
Abiko, Shigeo; and Kamaishi, Tadami, 4,259,905, Cl. 101-467.000.

Torreno, Manuel L., Jr.: *See*—
Mings, Joe D.; and Torreno, Manuel L., Jr., 4,260,908, Cl. 307-270.000.

Tosches, Anthony J., to Rockwell International Corporation. Weft carrier. 4,259,997, Cl. 139-448.000.

Tosco Corporation: *See*—
Schulman, Bernard L., 4,260,456, Cl. 201-12.000.
Touchette, Norman W.: *See*—
Joyce, Samuel F., III; Morgan, Albert W.; Touchette, Norman W.; and Vanderlinde, William, 4,260,542, Cl. 260-45.75R.
Touzard, Jean-Pierre; and Georget, Hubert, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Automatic gain control circuit. 4,260,953, Cl. 330-279.000.
Towlsaver, Inc.: *See*—
Perrin, Jack L.; and Tucker, Council A., 4,260,117, Cl. 242-55.300.
Townsend, John H.: *See*—
Taesler, Paul F.; and Townsend, John H., 4,259,747, Cl. 2-6.000.
Toyo Ink Manufacturing Co., Ltd.: *See*—
Mizoguchi, Naoji; Takama, Eiichi; and Kaneko, Kazuo, 4,260,424, Cl. 106-309.000.
Toyo Seikan Kaisha, Ltd.: *See*—
Fujiwara, Tatsuo; Watanabe, Masayasu; Yabumoyo, Mikio; Kanemori, Takaaki; and Seo, Hiroshi, 4,260,356, Cl. 425-311.000.
Toyoda Koki Kabushiki Kaisha: *See*—
Asano, Hiroaki; and Maruyama, Toshio, 4,259,940, Cl. 125-11.0CD.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Nakanishi, Kiyoshi; Ito, Kazuhiko; Okumura, Takeshi; Iezuka, Isamu; and Yasukawa, Masao, 4,259,933, Cl. 123-307.000.
Noda, Fumiyoshi; Murachi, Mikio; and Ueno, Hideaki, 4,260,585, Cl. 422-208.000.
Watanabe, Noboru; Inoue, Tokuta; and Mitsuyasu, Masaki, 4,259,935, Cl. 123-478.000.
Trac-Back Corporation: *See*—
Ekstam, John C., 4,260,064, Cl. 212-231.000.
Tracor, Inc.: *See*—
Gullicksen, Spencer O.; and Roberts, Thomas A., 4,260,218, Cl. 350-16.000.
Traeger, Rolf; Marx, Dieter; and Knutti, Helmut, to Carl Zeiss-Stiftung. Panoramic periscope. 4,260,217, Cl. 350-1.200.
Tranberg, Harriet R., executrix: *See*—
Krauch, Robert E., Jr.; and Tranberg, Thomas W., deceased, 4,259,906, Cl. 102-56.0SC.
Tranberg, Thomas W., deceased: *See*—
Krauch, Robert E., Jr.; and Tranberg, Thomas W., deceased, 4,259,906, Cl. 102-56.0SC.
Trane Company, The: *See*—
Pearse, Richard H., Jr., 4,259,847, Cl. 62-93.000.
Treacy, Edmond B.: *See*—
Congleton, Robert S.; and Treacy, Edmond B., 4,260,957, Cl. 331-94.50N.
Trelleborg AB: *See*—
Vestlund, Elof, 4,260,295, Cl. 405-269.000.
Trenkle, Robert W.; Mookherjee, Braja D.; Hall, John B.; Kasper, Robin; Vock, Manfred H.; Schreck, Ronald; Granda, Edward J.; and Vinals, Joaquin F., to International Flavors & Fragrances Inc. Use of 1-acetyl-22,6-trimethyl cyclohexene-1 in augmenting or enhancing the aroma of perfumes and cologne. 4,260,527, Cl. 252-522.00R.
Treuner, Uwe D., to E. R. Squibb & Sons, Inc. Pyrazolo [1,2-a][1,2,4] benzotriazines. 4,260,751, Cl. 544-183.000.
Tritech Corporation: *See*—
Hoffman, Jerzy, 4,260,159, Cl. 273-138.00A.
Troebel, Werner; and Klatt, Erwin, to Siemens Aktiengesellschaft. Low voltage circuit breaker with an electromagnetic tripping device. 4,260,969, Cl. 335-38.000.
Troll, John H., to Summit Licensing Company. Walking toy. 4,259,806, Cl. 46-44.000.
Truhan, Andrew; and Haynes, William R. Regenerative cyclone-type air/particulate concentrator and collector. 4,260,401, Cl. 55-339.000.
Trutschel, Hartwig H.; Schmitt, Gunter K.; and Sendelbach, Franz J., to Koenig & Bauer Aktiengesellschaft. Drive for a conveyor drum in a folder. 4,260,144, Cl. 270-14.000.
Trutzschler GmbH & Co. KG: *See*—
Trutzschler, Hermann, 4,259,765, Cl. 19-80.00R.
Trutzschler, Hermann, to Trutzschler GmbH & Co. KG. Bale supporting device for a bale opener. 4,259,765, Cl. 19-80.00R.
TRW Inc.: *See*—
Fleming, Alan W., 4,260,942, Cl. 318-565.000.
Hayden, Rodney, 4,260,985, Cl. 340-635.000.
Trybulski, Eugene J.: *See*—
Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, 4,260,772, Cl. 548-255.000.
Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, 4,260,773, Cl. 548-255.000.
Trygstad, Olav E.: *See*—
Reichelt, Karl-Ludwig; and Trygstad, Olav E., 4,260,601, Cl. 424-177.000.
Trzeciak, Kurt M.: *See*—
Crase, Gary M.; and Trzeciak, Kurt M., 4,260,202, Cl. 308-8.200.
Tsibris, John C. M., to Board of Regents, for and on behalf of the University of Florida. Addition copolymers of aminimides useful for affinity chromatography. 4,260,705, Cl. 525-330.000.
Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, to Olympus Optical Co., Ltd. Electrophotographic apparatus. 4,260,236, Cl. 355-3.0TR.
Tsuda, Mitsuru; and Tatano, Toshio, to Kyowa Hakko Kogyo Co., Ltd. Method and reagent for the quantitative determination of hydrogen peroxide and precursors thereof. 4,260,679, Cl. 435-10.000.
Tsukamoto, Kenkichi, to Tsukamoto, Siako. Magnetized active carbon composition. 4,260,523, Cl. 252-447.000.
Tsukamoto, Siako: *See*—
Tsukamoto, Kenkichi, 4,260,523, Cl. 252-447.000.
Tsuno, Takashi: *See*—
Kawaguchi, Hiroshi; Konishi, Masataka; Tsuno, Takashi; and Miyaki, Takeo, 4,260,683, Cl. 435-74.000.
Tsutsui, Kotaroh: *See*—
Fujino, Hitoshi; and Tsutsui, Kotaroh, 4,260,866, Cl. 200-331.000.
Tsutsui, Kyoji: *See*—
Sasaki, Masaomi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Tsutsui, Kyoji, 4,260,672, Cl. 430-72.000.
Tucker, Council A.: *See*—
Perrin, Jack L.; and Tucker, Council A., 4,260,117, Cl. 242-55.300.
Tucoulat, Marcel J.; and Lonchampt, Jacques, to Naphtachimie. Polyoxyalkylene trial additives for minimizing deposits from aqueous heat-exchange fluids. 4,260,504, Cl. 252-73.000.
Turcescu, Feodor: *See*—
Arama, Stefanica; Daschievici, Stefan; Ferat, Cezar; and Turcescu, Feodor, 4,259,894, Cl. 91-487.000.
Turley, Richard J.; and MacFarland, David R., to Olin Corporation. Preparation of noncellular polyurethane compositions. 4,260,728, Cl. 528-57.000.
Tuthill, Roger W. Precision celestial pole locator. 4,260,253, Cl. 356-153.000.
Twell, David: *See*—
Stocks, Richard A.; and Twell, David, 4,259,912, Cl. 111-77.000.
Twilley, Ian C.: *See*—
Bander, John A.; Lazarus, Stanley D.; and Twilley, Ian C., 4,260,735, Cl. 528-279.000.
Tyihak, Erno: *See*—
Lapis, Karoly; Szende, Bela; Jeney, Andreas; Kopper, Laszlo; Simon, Karoly; Tyihak, Erno; Kisfaludy, Lajos; Kovacs, Lajos; and Dobo, Gyorgy, 4,260,595, Cl. 424-10.000.
Tyves, Leonid I.: *See*—
Belyanin, Petr N.; Frolov, Konstantin V.; Kobrinsky, Aron E.; Korendyasev, Alfred I.; Rozin, Boris S.; Salamandra, Boris L.; Sokolovsky, Felix P.; Stolin, Jury V.; and Tyves, Leonid I., 4,259,876, Cl. 74-469.000.
Ube Industries, Ltd.: *See*—
Umemura, Sumio; Matsui, Kanenobu; Ikeda, Yoshinari; Masunaga, Katsuro; Kadota, Takumi; Fujii, Kozo; Nishihira, Keigo; and Matsuda, Masaoki, 4,260,810, Cl. 560-204.000.
Udall, William S.; and Harrington, Wilfred H., to Dunlop Limited. Tire and wheel rim assemblies. 4,260,006, Cl. 152-362.00R.
Ueda, Hiroshi; Miyamoto, Takayoshi; and Niwa, Masatake, to Minolta Camera Kabushiki Kaisha. Camera structure for single lens reflex camera. 4,260,232, Cl. 354-152.000.
Uematsu, Hiroyuki: *See*—
Motoki, Jinro; Ichikawa, Singo; Miyasaka, Kenzi; Uematsu, Hiroyuki; Murata, Mitsuhiro; Kawashima, Hideyuki; Inoue, Yuri; Ohkubo, Masae; and Oooka, Mituo, 4,261,048, Cl. 368-69.000.
Ueno, Hideaki: *See*—
Noda, Fumiyoshi; Murachi, Mikio; and Ueno, Hideaki, 4,260,585, Cl. 422-208.000.
Ueno, Tadashi, to Shimano Industrial Company, Limited. Multi-stage gear crank for a bicycle. 4,259,880, Cl. 74-594.200.
Ueta, Yutaka: *See*—
Tatemoto, Masayoshi; Tomoda, Masayasu; and Ueta, Yutaka, 4,260,698, Cl. 525-102.000.
Ulrich, Karl H.: *See*—
Schmalz, Karl H.; Schmidt, Arnold; and Ulrich, Karl H., 4,260,002, Cl. 144-230.000.
Ulrich, Ralph P.; and Hewitt, Deborah W., to Tektronix, Inc. Phosphorus removal from surface regions of phosphosilicate glass microcircuit layers. 4,260,425, Cl. 134-2.000.
Umehara, Teruo: *See*—
Nakamura, Tsutomu; and Umehara, Teruo, 4,260,920, Cl. 310-156.000.
Umemura, Sumio; Matsui, Kanenobu; Ikeda, Yoshinari; Masunaga, Katsuro; Kadota, Takumi; Fujii, Kozo; Nishihira, Keigo; and Matsuda, Masaoki, to Ube Industries, Ltd. Process for preparing diesters of dicarboxylic acids. 4,260,810, Cl. 560-204.000.
Unimation, Inc.: *See*—
Engelberger, Joseph F.; Lindbom, Torsten H.; Dunne, Maurice J.; Perzley, William; Roberts, Wilbur N.; and Gardner, Horace L., 4,260,940, Cl. 318-562.000.
Engelberger, Joseph F.; Lindbom, Torsten H.; Dunne, Maurice J.; Perzley, William; Roberts, Wilbur N.; and Gardner, Horace L., 4,260,941, Cl. 318-562.000.
Union Carbide Corporation: *See*—
Hodakowski, Leonard E.; and Koleske, Joseph V., 4,260,703, Cl. 525-455.000.
Kerg, Catherine A., 4,260,669, Cl. 429-215.000.
Morrell, Dennis G.; and Sherman, Paul D., Jr., 4,260,828, Cl. 568-454.000.
Moss, Jack R.; Sugar, John W.; Riemer, Ronald A.; Frick, Charles E.; and Dillon, Ronald D., 4,260,490, Cl. 210-620.000.
Vidueira, Jose A.; Forte, Paulino; and Somekh, George S., 4,260,476, Cl. 208-321.000.
Union Oil Company of California: *See*—
Miller, J. Wayne, 4,260,471, Cl. 208-8.0LE.
Uniroyal, Inc.: *See*—
Harrison, William A.; Hubbard, Winchester L.; and Grahame, Robert E., Jr., 4,260,765, Cl. 546-280.000.
Strunk, Richard J.; Hubbard, Winchester L.; and Grahame, Robert E., Jr., 4,260,552, Cl. 260-429.700.
United Kingdom Atomic Energy Authority: *See*—
Coulson, Robert A., 4,260,308, Cl. 414-8.000.

Hackney, Stanley, 4,260,312, Cl. 414-292.000.
United States of America
Agriculture: *See*—
Lambert, Michael B.; and Della-Moretta, Leonard B., 4,259,834, Cl. 56-504.000.
Schultz, William G.; Neumann, Harry J.; and Schade, John E., 4,260,638, Cl. 426-287.000.
Air Force: *See*—
West, Robert C., 4,260,780, Cl. 556-430.000.
Army: *See*—
Conrad, Raymond W., 4,260,251, Cl. 356-121.000.
Hill, Garnett L.; Molnar, Antal T.; and Jehan, Henry I., Jr., 4,260,384, Cl. 434-16.000.
Krauch, Robert E., Jr.; and Tranberg, Thomas W., deceased, 4,259,906, Cl. 102-56.0SC.
Martignoni, Pasquale; Murfree, James A.; Nappier, Henry A.; Ayers, Orval E.; and Chew, William M., 4,260,653, Cl. 427-247.000.
Tenney, Stephen M., 4,259,840, Cl. 60-602.000.
Wachs, John J.; and Jenkins, Andrew H., 4,260,255, Cl. 356-222.000.
Commerce: *See*—
McCarter, Robert J., 4,260,660, Cl. 428-284.000.
Energy: *See*—
Jones, Charles W., 4,260,349, Cl. 425-150.000.
Moir, Ralph W., 4,260,455, Cl. 176-9.000.
Warren, Jeffery H.; and Hootman, Harry E., 4,259,910, Cl. 110-211.000.
Interior: *See*—
Eichbaum, Barlane R.; Eisele, Judith A.; and Bauer, Donald J., 4,260,589, Cl. 423-123.000.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Bejczy, Antal K. Terminal guidance sensor system. 4,260,187, Cl. 294-86.00R.
Etsion, Izhak. Self-stabilizing radial face seal. 4,260,166, Cl. 277-96.000.
Hedgepeth, John M.; Coyner, John V.; and Crawford, Robert F. Foldable beam. 4,259,825, Cl. 52-645.000.
National Aeronautics and Space Administration: *See*—
Bush, Harold G., 4,259,821, Cl. 52-309.100.
Navy: *See*—
Dacons, Joseph C., 4,260,837, Cl. 568-931.000.
Douda, Bernard E.; Parrish, Clyde F.; and Short, James E., Jr., 4,260,509, Cl. 252-171.000.
Miles, Melvin H.; and Fletcher, Aaron N., 4,260,667, Cl. 429-112.000.
Saul, David L., 4,260,964, Cl. 533-26.000.
Taesler, Paul F.; and Townsend, John H., 4,259,747, Cl. 2-6.000.
U.S. Philips Corporation: *See*—
Bakker, Pieter; Kuit, Rudolf S.; and Politiek, Jarig, 4,260,893, Cl. 250-397.000.
Bakker, Pieter; Kuit, Rudolf S.; and Politiek, Jarig, 4,260,897, Cl. 250-492.00A.
Boiten, Ebbe; Groothuis, Gerrit J.; and de Vries, Jochem J., 4,259,781, Cl. 30-43.600.
Dannert, Horst; and Hirsch, Hans-Jurgen, 4,260,887, Cl. 250-315.200.
Hagemann, Hans J.; and Hunten, Siegfried, 4,260,663, Cl. 428-472.000.
Jacobs, Cornelis A. J.; and Brugmans, Marinus F., 4,260,929, Cl. 313-184.000.
Kuus, Gijsbert; de Vaan, Robertus L. C.; Jacobs, Cornelis A. J.; and Smulders, Herman A. G. S., 4,260,934, Cl. 315-326.000.
Nagelkerke, Petrus J. J., 4,260,871, Cl. 219-222.000.
Roger, Bernard, 4,261,002, Cl. 357-46.000.
Wesselink, Gustaaf A.; Roelofs, Hendrik; and Van Bommel, Cornelis H. M., 4,260,931, Cl. 313-493.000.
U.S. Product Development Company: *See*—
Adell, Robert, 4,259,812, Cl. 49-462.000.
United States Steel Corporation: *See*—
Didycz, William J.; Glassman, Donald; Maier, Edward E.; and Saniga, George T., 4,260,462, Cl. 203-22.000.
United Technologies Corporation: *See*—
Johnson, Bruce V., 4,260,336, Cl. 416-96.00R.
Markowski, Stanley J.; and Lohmann, Robert P., 4,260,367, Cl. 431-353.000.
Nakagawa, Toshio W.; and Rudy, Thomas P., 4,260,437, Cl. 149-19.900.
Prewo, Karl M., 4,260,441, Cl. 156-166.000.
Wayne, Robert J.; Laughman, Lanny M.; Chenausky, Peter P.; and Buczek, Carl J., 4,260,958, Cl. 331-94.5PE.
Unitron Corporation: *See*—
Zaderej, Andrew; and Zaderej, George, 4,260,943, Cl. 320-21.000.
Universal Instruments Corporation: *See*—
Ackerman, Daniel W., 4,260,216, Cl. 339-258.00S.
Universal Research and Development Corp.: *See*—
Thomas, John C., 4,259,841, Cl. 60-669.000.
University of Delaware: *See*—
Katzer, James R.; and Windawi, Hassan, 4,260,518, Cl. 252-411.00S.
University Patents, Inc.: *See*—
Scherberg, Neal H., 4,260,737, Cl. 536-28.000.
UOP Inc.: *See*—
Firth, Bruce E., 4,260,833, Cl. 568-789.000.
Frame, Robert R., 4,260,479, Cl. 208-207.000.
Upjohn Company, The: *See*—
Farrissey, William J., Jr.; Goldwasser, David J.; and Onder, Kemal B., 4,260,718, Cl. 528-60.000.
Sih, John C., 4,260,783, Cl. 560-53.000.
Sih, John C., 4,260,784, Cl. 560-53.000.
Sih, John C., 4,260,785, Cl. 560-53.000.
Sih, John C., 4,260,786, Cl. 560-53.000.
Sih, John C., 4,260,787, Cl. 560-53.000.
Sih, John C., 4,260,788, Cl. 560-53.000.
Sih, John C., 4,260,789, Cl. 560-53.000.
Sih, John C., 4,260,790, Cl. 560-53.000.
Sih, John C., 4,260,791, Cl. 560-53.000.
Sih, John C., 4,260,792, Cl. 560-53.000.
Sih, John C., 4,260,793, Cl. 560-53.000.
Sih, John C., 4,260,794, Cl. 560-53.000.
Sih, John C., 4,260,795, Cl. 560-53.000.
Sih, John C., 4,260,796, Cl. 560-53.000.
Sih, John C., 4,260,797, Cl. 560-53.000.
Sih, John C., 4,260,798, Cl. 560-53.000.
Sih, John C., 4,260,799, Cl. 560-53.000.
Sih, John C., 4,260,800, Cl. 560-53.000.
Sih, John C., 4,260,801, Cl. 560-53.000.
Sih, John C., 4,260,807, Cl. 560-121.000.
Sih, John C., 4,260,819, Cl. 562-503.000.
Sih, John C., 4,260,825, Cl. 564-384.000.
Urata, Kiyoshi: *See*—
Nakamura, Masazo; Sudo, Eiichi; and Urata, Kiyoshi, 4,260,127, Cl. 249-207.000.
Urata, Yoshihito; and Sasaki, Toshiharu, to Matsushita Electric Industrial Co., Ltd. Tape driving apparatus. 4,260,120, Cl. 242-201.000.
Urban, Peter. Endoscopic system. 4,259,948, Cl. 128-6.000.
Uyeda, Stanley T.; and Cha, John, to Santa Fe International Corporation. Portable reel pipelaying method. 4,260,287, Cl. 405-168.000.
Valchev, Alexander Y.: *See*—
Koychev, Todor Y.; Georgiev, Georgi M.; Lazov, Lyuben K.; and Valchev, Alexander Y., 4,259,919, Cl. 118-47.000.
Valextra S.p.A.: *See*—
Fontana, Giampiero, 4,259,857, Cl. 70-456.00B.
Valle, Ronald. Method of treating depression. 4,260,600, Cl. 424-166.000.
Valley Candle Mfg. Co., Inc.: *See*—
Kayne, Marvin L., 4,260,365, Cl. 431-291.000.
Van Dusen & Co., Inc.: *See*—
Van Dusen, Frederick E., 4,260,313, Cl. 414-313.000.
Van Bilderbeek, Bernard H., to Vetco, Inc. Through the flow-line selector apparatus and method. 4,260,022, Cl. 166-339.000.
Van Blarcom, David: *See*—
Fox, Daniel J.; Van Blarcom, David; and Rubin, Fred K., 4,260,528, Cl. 252-525.000.
Van Bommel, Cornelis H. M.: *See*—
Wesselink, Gustaaf A.; Roelofs, Hendrik; and Van Bommel, Cornelis H. M., 4,260,931, Cl. 313-493.000.
van Cromvoirt, Johannes A. M., to Aarts, Aloysius Johannes Baptist. Unit liquid cup. 4,260,065, Cl. 215-2.000.
Vandenbroucke, Roger A. J.: *See*—
Bayle Laboure, Gerard J. P.; Buisson, Marc F. B.; and Vandenbroucke, Roger A. J., 4,259,839, Cl. 60-261.000.
Vanderlinde, William: *See*—
Joyce, Samuel F., III; Morgan, Albert W.; Touchette, Norman W.; and Vanderlinde, William, 4,260,542, Cl. 260-45.75R.
van der Plas, Klaas H.: *See*—
Vooren, Pieter H.; and van der Plas, Klaas H., 4,259,967, Cl. 128-720.000.
Van Dusen, Frederick E., to Van Dusen & Co., Inc. Silo discharge door frame for use with silo clean chute funnel. 4,260,313, Cl. 414-313.000.
Van Renseen, Marinus; and Wardell, Myron H., Jr., to RCA Corporation. Kinescope screen center locator. 4,261,013, Cl. 358-139.000.
Vasiliev, Nikolai V.: *See*—
Knyazeva, Vera I.; Vasiliev, Nikolai V.; Khuditskaya, Galina S.; Ponomarev, Alexandr I.; Ponomarev, Vasily I.; and Belyansky, Oleg M., 4,259,854, Cl. 69-21.000.
Vasvari nee Debreczi, Lelle: *See*—
Hermecz, Istvan; Meszaros, Zoltan; Breining, Tibor; Virag, Sandor; Vasvari nee Debreczi, Lelle; Horvath, Agnes; Nagy, Gabor; Mandi, Attila; Szuts, Tamas; Bitteer, Istvan; and Sebestyen, Gyula, 4,260,612, Cl. 424-251.000.
Vending Components Inc.: *See*—
Cerrato, Vincent J., 4,260,074, Cl. 222-1.000.
Vepa Aktiengesellschaft: *See*—
Fleissner, Hans, 4,259,853, Cl. 68-5.00D.
Verboom, Pieter, to IHC Holland N.V. Dragging type cutter head for a suction dredger. 4,259,795, Cl. 37-66.000.
Verdicchio, Robert J.: *See*—
Armstrong, David P.; Lukenbach, Elvin R.; and Verdicchio, Robert J., 4,260,550, Cl. 260-410.000.
Verlaeten, Jean; and Preumont, Maurice, to Solvay & Cie. Method for the manufacture of crystals of sodium carbonate monohydrate. 4,260,594, Cl. 423-421.000.
Vermont Tubbs, Inc.: *See*—
Morgan, C. Baird, Jr.; Alexy, Fred H.; and Geh, Robert E., 4,259,793, Cl. 36-125.000.
Vernier, Vernon G.: *See*—
Schmidt, William K.; Smith, Christine; Smith, Dewey H., Jr.; and Vernier, Vernon G., 4,260,629, Cl. 424-274.000.

Vernon, John H.: *See*—
Lemay, Richard A.; Huettner, Robert E.; Grandmaison, John P.; and Vernon, John H., 4,261,033, Cl. 364-200.000.

Vest, Eugene W.: *See*—
McGahey, Dean C.; and Vest, Eugene W., 4,260,000, Cl. 141-59.000.

Vestlund, Elof, to Trelleborg AB. Injector. 4,260,295, Cl. 405-269.000.

Vetco, Inc.: *See*—
Van Bilderbeek, Bernard H., 4,260,022, Cl. 166-339.000.

Via, Francis A., to Stauffer Chemical Company. Photopolymerizable composition stabilized with epoxide compounds and process. 4,260,465, Cl. 204-159.230.

VIDAC: *See*—
Mullen, James W., 4,260,656, Cl. 428-42.000.

Videira, Jose A.; Forte, Paulino; and Somekh, George S., to Union Carbide Corporation. Separation of aromatic hydrocarbons from petroleum fractions. 4,260,476, Cl. 208-321.000.

Vinals, Joaquin: *See*—
Sprecker, Mark A.; Vock, Manfred H.; Schmitt, Frederick L.; Vinals, Joaquin; and Kiwala, Jacob, 4,260,511, Cl. 252-174.110.

Vinals, Joaquin F.: *See*—
Trenkle, Robert W.; Mookherjee, Braja D.; Hall, John B.; Kasper, Robin; Vock, Manfred H.; Schreck, Ronald; Granda, Edward J.; and Vinals, Joaquin F., 4,260,527, Cl. 252-522.00R.
Withycombe, Donald A.; Mookherjee, Braja D.; Vock, Manfred H.; and Vinals, Joaquin F., 4,260,641, Cl. 426-536.000.

Virag, Sandor: *See*—
Hermecz, Istvan; Meszaros, Zoltan; Breining, Tibor; Virag, Sandor; Vasvari nee Debreczi, Lelle; Horvath, Agnes; Nagy, Gabor; Mandi, Attila; Szuts, Tamas; Bitteer, Istvan; and Sebestyen, Gyula, 4,260,612, Cl. 424-251.000.

Vitalograph (Ireland) Limited: *See*—
Vooren, Pieter H.; and van der Plas, Klaas H., 4,259,967, Cl. 128-720.000.

Vock, Manfred H.: *See*—
Mookherjee, Braja D.; Wilson, Richard A.; Schmitt, Frederick L.; and Vock, Manfred H., 4,260,512, Cl. 252-174.110.
Sprecker, Mark A.; Vock, Manfred H.; Schmitt, Frederick L.; Vinals, Joaquin; and Kiwala, Jacob, 4,260,511, Cl. 252-174.110.
Trenkle, Robert W.; Mookherjee, Braja D.; Hall, John B.; Kasper, Robin; Vock, Manfred H.; Schreck, Ronald; Granda, Edward J.; and Vinals, Joaquin F., 4,260,527, Cl. 252-522.00R.
Withycombe, Donald A.; Mookherjee, Braja D.; Vock, Manfred H.; and Vinals, Joaquin F., 4,260,641, Cl. 426-536.000.

Vockenhuber, Karl: *See*—
Rollenitz, Leopold, 4,260,246, Cl. 355-45.000.

Voest-Alpine Aktiengesellschaft: *See*—
Hirn, Ferdinand; and Edlinger, Manfred, 4,260,280, Cl. 404-122.000.

Voigt, Carl A. Refrigeration system. 4,259,848, Cl. 62-113.000.

Volkswagenwerk Aktiengesellschaft: *See*—
Hofbauer, Peter, 4,259,930, Cl. 123-179.00J.
Moller, Hartmut, 4,259,978, Cl. 137-54.000.

Volland, Jerry. Selective frequency optical generator. 4,260,933, Cl. 315-326.000.

von Konig, Anita: *See*—
Weyde, Edith; von Konig, Anita; and Liebe, Werner, 4,260,674, Cl. 430-271.000.

Vooren, Pieter H.; and van der Plas, Klaas H., to Vitalograph (Ireland) Limited. Apparatus for the determination of respiratory parameters. 4,259,967, Cl. 128-720.000.

Voshall, Roy E.: *See*—
Wayland, Paul O.; Gorman, Joseph G.; and Voshall, Roy E., 4,260,864, Cl. 200-144.00B.

Vowinkel, Frank C.: *See*—
Grilletto, Carlo; and Vowinkel, Frank C., 4,260,886, Cl. 250-288.000.

Vredestein N. V.: *See*—
Kramer, Hendrikus, 4,259,992, Cl. 138-138.000.

VSI Corporation: *See*—
Stencel, Edgar L., 4,260,005, Cl. 411-3.000.

W.E.F.C.O., Inc.: *See*—
Langan, Ervin C., 4,260,027, Cl. 172-45.000.

W. R. Grace & Co.: *See*—
Glemza, Rimantas, 4,260,396, Cl. 51-298.000.

Wabco Fahrzeugbremsen G.m.b.H.: *See*—
Reinecke, Erich, 4,260,199, Cl. 303-96.000.

Wachs, John J.; and Jenkins, Andrew H., to United States of America, Army. High energy laser beam sampling meter. 4,260,255, Cl. 356-222.000.

Wachtel, Joseph; and Aguilar, Josephine, to A. B. Dick Company. Ink composition for printing on polyolefin. 4,260,531, Cl. 260-29.60E.

Wacker-Chemie GmbH: *See*—
Deubzer, Bernward; and Brunner, Erich, 4,260,726, Cl. 528-15.000.

Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH: *See*—
Herzer, Heinz, 4,260,448, Cl. 156-605.000.

Wada, Yoshinobu, to Shibuya Kogyo Company, Ltd. Gas precharged, liquid filling machine operating with dual rows of containers. 4,259,999, Cl. 141-57.000.

Wagener, Earl H.: *See*—
Harris, Robert F.; and Wagener, Earl H., 4,260,826, Cl. 568-11.000.

Wagner, Harald: *See*—
Blindow, Friedrich-Karl; Decker, Jurgen; Kluibenschedl, Heinrich; Munding, German; Sowa, Armin; and Wagner, Harald, 4,260,194, Cl. 299-11.000.

Wagner, Kuno: *See*—
Reischl, Artur; Muller, Hanns; and Wagner, Kuno, 4,260,530, Cl. 260-29.300.

Wagner, Richard H.: *See*—
Wilcox, Albert F.; Wood, Don C.; and Wagner, Richard H., 4,260,975, Cl. 336-65.000.

Wagner, Victor A.: *See*—
Saccomano, Michael L.; Washburn, Jerry R.; Goodrich, Donald W.; Wagner, Victor A.; and Kaufman, Phillip A., 4,261,034, Cl. 364-200.000.

Wahle, Gunter: *See*—
Greve, Heinz; and Wahle, Gunter, 4,259,769, Cl. 28-283.000.

Wako Pure Chemical Industries, Ltd.: *See*—
Tanaka, Motoaki; Miyagawa, Tsutomu; and Nakata, Takashi, 4,260,713, Cl. 526-215.000.

Walker, Hans: *See*—
Pegel, Karl H.; and Walker, Hans, 4,260,603, Cl. 424-182.000.

Walker, Wesley W. Suturing element. 4,259,959, Cl. 128-337.000.

Wall-Andersen, Steen, to Drilbox Georg Knoblauch Werkzeugkassettenfabrik. Container for cylindrical articles. 4,260,057, Cl. 206-379.000.

Wallace, Norman R.: *See*—
Ellers, Frederick S.; and Wallace, Norman R., 4,260,288, Cl. 405-168.000.

Waller, Lloyd E.; and Zorbalas, George S., to RCA Corporation. Dual standard color framer. 4,261,008, Cl. 358-19.000.

Walles, Wilhelm E., to Dow Chemical Company, The. Energy saving radiant insulative device. 4,260,225, Cl. 350-353.000.

Wallshein, Melvin. Bent wire orthodontic spring clip. 4,260,375, Cl. 433-11.000.

Wallsten, Hans I., to Inventing S.A. Selectively convertible apparatus for treating a moving web. 4,259,921, Cl. 118-206.000.

Walser, Armin: *See*—
Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, 4,260,772, Cl. 548-255.000.
Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, 4,260,773, Cl. 548-255.000.

Walsh, James H. Removable anchor assemblies. 4,259,890, Cl. 411-57.000.

Walter, Berthold: *See*—
Berthel, Karl; Schmid, Olaf; Walter, Berthold; Spechner, Ludwig; Sturm, Theodor; and Degel, Hans-Peter, 4,260,973, Cl. 335-133.000.

Walter, Henry J.; Kunz, Raymond W.; and Shoemaker, Richard E., to Clairol Incorporated. Controlled temperature hair dryer. 4,260,875, Cl. 219-364.000.

Walters, Robert B.; and Wilkus, Edward V., to General Electric Company. Polyolefin compounds having improved heat curing stability, method of improving heat aging stability therein, an electrical conductor insulated therewith and method of forming. 4,260,661, Cl. 428-389.000.

Walton, Arthur. Power driven fluid displacement apparatus. 4,260,267, Cl. 366-343.000.

Wambach, Raimund: *See*—
Klinkmann, Kurt; and Wambach, Raimund, 4,260,827, Cl. 568-414.000.

Wang, Chih C.; and Bates, Ronald F., to RCA Corporation. Method of depositing an abrasive layer. 4,260,647, Cl. 427-40.000.

Wang, York Y.: *See*—
Barnett, William T.; Lundgren, Carl W., Jr.; Rummler, William D.; and Wang, York Y., 4,261,056, Cl. 455-273.000.

Ward Industries, Inc.: *See*—
Ward, John A.; and Franssen, Carol A., 4,259,918, Cl. 116-200.000.

Ward, John A.; and Franssen, Carol A., to Ward Industries, Inc. Self-cleaning traction wheel motion sensor. 4,259,918, Cl. 116-200.000.

Ward, Michael D.: *See*—
Schwartz, Jeffrey; and Ward, Michael D., 4,260,842, Cl. 585-377.000.

Wardell, Myron H., Jr.: *See*—
Van Renseen, Marinus; and Wardell, Myron H., Jr., 4,261,013, Cl. 358-139.000.

Warner-Lambert Company: *See*—
De Wald, Horace A., 4,260,623, Cl. 424-267.000.
Jacobson, Walter E.; Kronish, Donald P.; Taylor, Doris B.; and Young, William D., 4,260,687, Cl. 435-301.000.

Warren, Jeffery H.; and Hootman, Harry E., to United States of America, Energy. Electric controlled air incinerator for radioactive wastes. 4,259,910, Cl. 110-211.000.

Warren, John A., Jr., to Dan Gurney Cycle Products. Vehicle luggage racks and containers carried thereby. 4,260,084, Cl. 224-32.00A.

Warshawsky, Jay, to Fuller Company. Method of converting a rotary kiln cement making plant to a calcining furnace cement making plant. 4,260,369, Cl. 432-3.000.

Warzel, Fred M., to Phillips Petroleum Co. Method for feeding waste yarn to an extruder. 4,260,568, Cl. 264-37.000.

Washburn, Jerry R.: *See*—
Saccomano, Michael L.; Washburn, Jerry R.; Goodrich, Donald W.; Wagner, Victor A.; and Kaufman, Phillip A., 4,261,034, Cl. 364-200.000.

Wason, Satish K.; and Mays, Robert K., to J. M. Huber Corporation. Precipitated siliceous products used in paper. 4,260,454, Cl. 162-181.00C.

Watanabe, Hiroshi: *See*—
Yanagisawa, Wasuke; and Watanabe, Hiroshi, 4,260,988, Cl. 343-700.0MS.

Watanabe, Masayasu: *See*—
Fujiwara, Tatsuo; Watanabe, Masayasu; Yabumoyo, Mikio; Kanemori, Takaaki; and Seo, Hiroshi, 4,260,356, Cl. 425-311.000.

Watanabe, Noboru; Inoue, Tokuta; and Mitsuyasu, Masaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Fuel injection type throttle valve. 4,259,935, Cl. 123-478.000.

Watanabe, Risaburo; Ohtani, Masami; and Hashizume, Naoki, to Robert Bosch GmbH. Vane compressor. 4,260,343, Cl. 418-269.000.

Watarai, Etsuyoshi, to Shimano Industrial Company Limited. Control device for a derailleur. 4,259,879, Cl. 74-501.50R.

Watson, Robert L. Support cushion. 4,259,757, Cl. 5-434.000.

Watts, Donald A.: *See*—
Wright, Steven A.; and Watts, Donald A., 4,260,890, Cl. 250-373.000.

Wauters, Remi: *See*—
Hens, Theo; and Wauters, Remi, 4,260,930, Cl. 313-481.000.

Waxman, Elliot: *See*—
Weintraub, Morton; Waxman, Elliot; and Gendelman, Bernard, 4,261,006, Cl. 358-3.000.

Wayland, Paul O.; Gorman, Joseph G.; and Voshall, Roy E., to Westinghouse Electric Corp. Vacuum-type circuit interrupter with an improved contact with axial magnetic field coil. 4,260,864, Cl. 200-144.00B.

Wayne, Robert J.; Laughman, Lanny M.; Chenausky, Peter P.; and Buczek, Carl J., to United Technologies Corporation. Apparatus and method for deposition of electrical power in an electric discharge laser. 4,260,958, Cl. 331-94.5PE.

Weaver, Harold J. Golf green slope indicating device. 4,260,151, Cl. 273-32.00H.

Weaver, Max A.: *See*—
Coates, Clarence A., Jr.; and Weaver, Max A., 4,260,742, Cl. 542-127.000.

Weber, Gunter, to Linde Aktiengesellschaft. Recovery of salts of anthraquinone disulfonic acid in the Stretford process. 4,260,590, Cl. 423-226.000.

Weber, Heinrich; Lorenz, Kurt; and Dungs, Horst, to Carl Still Recklinghausen, Firma. Coke oven construction for the continuous coking of briquettes from hard or soft coal or peat. 4,260,458, Cl. 202-121.000.

Weber, Karl-Heinz, to Gebr. Eickhoff Maschinenfabrik und Eisengeisserei m.b.H. Method and apparatus to control tension in a trailing cable and/or waterhose for a mining machine. 4,260,191, Cl. 299-1.000.

Webinger, George P., to Champion International Corporation. Expandable container and blank therefor. 4,260,101, Cl. 229-41.00C.

Webster, Donald R., to Neotec Corporation. Grain quality analyzer. 4,260,262, Cl. 356-418.000.

Weckler, Gerhard: *See*—
Thamm, Horst-Dieter; Knittel, Volker; Sommer, Werner; and Weckler, Gerhard, 4,260,422, Cl. 106-111.000.

Wehrmeister, Herbert L., to International Minerals & Chemical Corp. Antimicrobial agents. 4,260,634, Cl. 424-324.000.

Weidman, Peter C.; and Woodmansee, Wayne E., to Boeing Company M/S 7E-25, The. Method and apparatus for the analysis of scanned data. 4,261,040, Cl. 364-554.000.

Weingart, Oscar; and Morris, Edgar E., to Structural Composite Industries, Inc. Composite spar structure having integral fitting for rotational hub mounting. 4,260,332, Cl. 416-226.000.

Weintraub, Morton; Waxman, Elliot; and Gendelman, Bernard. Remote control of video. 4,261,006, Cl. 358-3.000.

Weis, Siegfried K., to C. L. Frost & Son, Inc. Eccentric boring tool and method. 4,260,306, Cl. 409-200.000.

Weiss, Paul A.: *See*—
Nelson, Wayne F.; and Weiss, Paul A., 4,260,017, Cl. 166-154.000.

Weiss, Robert L.: *See*—
Babuka, Robert; Emmons, William D.; Weiss, Robert L.; and Yacko, Peter, 4,260,210, Cl. 339-91.00R.

Weissman, Bernard, to Ipco Hospital Supply Corporation. Dental retaining splint. 4,260,383, Cl. 433-225.000.

Wellslager, John A.; and Rosenberg, Susan L., to Allied Chemical Corporation. Method and apparatus for casting amorphous filament using a crucible with a boric oxide seal. 4,260,007, Cl. 164-64.000.

Wemyss, George A. Method and apparatus for anchoring sheet material to a framework. 4,259,819, Cl. 52-222.000.

Werding, Winfried. Spray nozzle, devices containing the same and apparatus for making such devices. 4,260,110, Cl. 239-404.000.

Werfelman, Daniel H., to CPC International Inc. Environmental filters. 4,260,426, Cl. 134-29.000.

Werner, Wolfgang: *See*—
Rittersdorf, Walter; Guthlein, Werner; Werner, Wolfgang; Rey, Hanz-Georg; and Rieckmann, Peter, 4,260,777, Cl. 549-33.000.

Wernicke, Hans J.; Kreuter, Walter; and Schliebener, Claus, to Linde Aktiengesellschaft. Thermal cracking of heavy fraction of hydrocarbon hydrogenate. 4,260,474, Cl. 208-57.000.

Wesner, Walter H.: *See*—
Cary, John R.; and Wesner, Walter H., 4,260,079, Cl. 222-209.000.

Wesselink, Gustaaf A.; Roelofs, Hendrik; and Van Bommel, Cornelis H. M., to U.S. Philips Corporation. Low-pressure mercury vapor discharge lamp with luminescent coatings on envelope walls. 4,260,931, Cl. 313-493.000.

West, Harold E., to Westinghouse Electric Corp. Transit vehicle door control apparatus. 4,259,810, Cl. 49-118.000.

West, Keith D.: *See*—
Drew, John F.; Pepper, John A.; Shuttlewood, Victor C.; and West, Keith D., 4,260,752, Cl. 544-190.000.

West, Robert C., to United States of America, Air Force. Phenylmethylpolysilane polymers and process for their preparation. 4,260,780, Cl. 556-430.000.

Western Electric Company, Inc.: *See*—
Brown, Donald R.; Masopust, Otto T., Jr.; and Meal, John R., 4,260,850, Cl. 174-52.00R.
Burns, John A., 4,260,670, Cl. 430-5.000.

Western Geophysical Co. of America: *See*—
Mollere, John C., 4,260,211, Cl. 339-91.00B.

Westinghouse Electric Corp.: *See*—
Chapman, Lloyd E.; and Pedley, Dennis W., 4,261,027, Cl. 362-255.000.
Haderer, Norman G.; and Harris, Robert D., 4,260,650, Cl. 427-54.100.
Holritz, Robert F.; and Stewart, Robert C., deceased, 4,260,318, Cl. 414-589.000.
Lugosi, Robert; Fechko, George J.; Male, Alan T.; Haller, Henry E., III; and Mole, Cecil J., 4,260,924, Cl. 310-213.000.
Miller, Harold L., 4,260,976, Cl. 337-162.000.
Reed, Terry J.; and Yannone, Robert A., 4,259,835, Cl. 60-39.28R.
Wayland, Paul O.; Gorman, Joseph G.; and Voshall, Roy E., 4,260,864, Cl. 200-144.00B.
West, Harold E., 4,259,810, Cl. 49-118.000.

Westland, Alan D.: *See*—
Kerr, F. Michael; and Westland, Alan D., 4,260,645, Cl. 427-1.000.

Weyde, Edith; von Konig, Anita; and Liebe, Werner, to Agfa-Gevaert Aktiengesellschaft. Silver salt photographic material for the production of silver and bubble photographic images with 80% transparency. 4,260,674, Cl. 430-271.000.

Weyerhaeuser Company: *See*—
Hoffman, Ronald W., 4,260,100, Cl. 229-39.00R.

Wheatley, Carl F., Jr., to RCA Corporation. Reference voltage circuit using nested diode means. 4,260,946, Cl. 323-314.000.

Wheelhouse, Robert W.: *See*—
Hey, David G.; and Wheelhouse, Robert W., 4,260,510, Cl. 252-171.000.

Whirlco, Inc.: *See*—
Bergman, Carl P., 4,260,076, Cl. 222-46.000.

White, Alfred. K.: *See*—
Brearley, Malcolm; and White, Alfred. K., 4,260,200, Cl. 303-97.000.

White, Ben E.: *See*—
Geyer, Charles J., Jr; and White, Ben E., 4,260,739, Cl. 536-61.000.

Whitehead, Lorne A., to Canadian Patents and Development Limited. Prism light guide having surfaces which are in octature. 4,260,220, Cl. 350-96.280.

Whitlock, Bruce N.: *See*—
Smith, John L.; and Whitlock, Bruce N., 4,260,467, Cl. 204-195.00H.

Wiechert, Rudolf: *See*—
Kerb, Ulrich; Stahnke, Manfred; and Wiechert, Rudolf, 4,260,464, Cl. 204-158.0HA.

Wiedermann, Rolf: *See*—
Haas, Peter; Blahak, Johannes; and Wiedermann, Rolf, 4,260,754, Cl. 544-215.000.

Wilcox, Albert F.; Wood, Don C.; and Wagner, Richard H., to General Electric Company. Transformer with terminal board support and clamping-mounting structure. 4,260,975, Cl. 336-65.000.

Wiley, Richard H. Poly[di-1,2-(diazinylidene)-ethene-1,2-diols]. 4,260,757, Cl. 544-238.000.

Wilkus, Edward V.: *See*—
Walters, Robert B.; and Wilkus, Edward V., 4,260,661, Cl. 428-389.000.

Will, Fritz G., to General Electric Company. Microporous insulating barrier system for electrode boiler output control. 4,260,874, Cl. 219-290.000.

Will, Stephen A.: *See*—
Young, Charles E.; and Will, Stephen A., 4,260,291, Cl. 405-205.000.

Williams, Anthony M., to EMI Limited. Radiation detectors. 4,260,891, Cl. 250-385.000.

Williams, Frank J., III: *See*—
Loucks, George R.; and Williams, Frank J., III, 4,260,733, Cl. 528-219.000.

Willms, Robert: *See*—
Kaiser, Karl; Willms, Robert; and Kuxdorf, Bernhard, 4,260,847, Cl. 585-833.000.

Wilson, Richard A.; Mookherjee, Braja D.; Hall, John B.; and Stork, Gilbert, to International Flavors & Fragrances Inc. Process for the preparation of methyl dihydrojasmonate and lower alkyl homologues. 4,260,830, Cl. 568-485.000.

Wilson, Richard A.: *See*—
Mookherjee, Braja D.; Wilson, Richard A.; Schmitt, Frederick L.; and Vock, Manfred H., 4,260,512, Cl. 252-174.110.

Wilson, Robert F. Testing apparatus. 4,259,788, Cl. 434-338.000.

Windawi, Hassan: *See*—
Katzer, James R.; and Windawi, Hassan, 4,260,518, Cl. 252-411.00S.

Windsor Machine Company Limited: *See*—
Scott-Jackson, Dennis G.; and Lim, Hui C., 4,259,783, Cl. 30-384.000.

Winebarger, Joseph P., to Telex Computer Products, Inc. Power-on-reset circuit with power fail detection. 4,260,907, Cl. 307-264.000.

Wingard, Robert E., Jr.; and Leonard, William J., Jr., to Dynapol. Acetamidoethylene copolymers. 4,260,714, Cl. 526-271.000.

Wingert, Rudolf, to Presto Lock Company, Division of Walter Kidde & Company, Inc. Combination locks and dial-indexing spring therefor. 4,259,856, Cl. 70-70.000.

Winner, Kurt W.; and Cangialosi, Ignazio. Plastic window. 4,259,813, Cl. 49-504.000.

Winslow, John M.; and Klosterboer, Donald H., to Minnesota Mining and Manufacturing Company. Thermographic and photothermographic materials having silver salt complexes therein. 4,260,677, Cl. 430-618.000.

Wisconsin Alumni Research Foundation: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Paaren, Herbert E.; and Hamer, David E., 4,260,549, Cl. 260-397.200.
DeLuca, Hector F.; Schnoes, Heinrich K.; and Esvelt, Robert P., 4,260,804, Cl. 560-117.000.

Withycombe, Donald A.; Mookherjee, Braja D.; Vock, Manfred H.; and Vinals, Joaquin F., to International Flavors & Fragrances Inc. Mixtures containing isobutyl substituted heterocyclic compounds and flavor use thereof. 4,260,641, Cl. 426-536.000.

Witt, Leonard; and Witt, Mary. Cartridge-holder. 4,259,892, Cl. 89-16.000.

Witt, Mary: *See*—
Witt, Leonard; and Witt, Mary, 4,259,892, Cl. 89-16.000.

Witte, Josef: *See*—
Sylvester, Gerd; Witte, Josef; and Marwede, Gunter, 4,260,707, Cl. 526-114.000.

Wittenberg, Sidney. Method and apparatus for immobilizing a contact lens. 4,260,252, Cl. 356-124.000.

Wittmann, Otto: *See*—
Reuther, Wolfgang; Segnitz, Adolph; Wittmann, Otto; and Schatz, Hermann, 4,260,532, Cl. 260-29.6HN.

Wittwer, Alvin L., to International Business Machines Corporation. Aspirated ink jet printer head. 4,260,996, Cl. 346-75.000.

Witzel, Bruce E.: *See*—
Dybas, Richard A.; Grier, Nathaniel; and Witzel, Bruce E., 4,260,760, Cl. 544-396.000.

Wixon, Harold E., to Colgate-Palmolive Company. Phosphate-free concentrated particulate heavy duty laundry detergent. 4,260,651, Cl. 427-214.000.

Wolf, David L.: *See*—
Jerke, Marlyn L.; Stokes, William E.; and Wolf, David L., 4,259,831, Cl. 56-98.000.

Wood, Don C.: *See*—
Gross, Robert S.; and Wood, Don C., 4,260,215, Cl. 339-258.00F.
Wilcox, Albert F.; Wood, Don C.; and Wagner, Richard H., 4,260,975, Cl. 336-65.000.

Woodbridge, David D. Wave operated electrical generation system. 4,260,901, Cl. 290-42.000.

Woodford, Warren J. Available aroma of cocaine. 4,260,517, Cl. 252-408.000.

Woodmansee, Wayne E.: *See*—
Weidman, Peter C.; and Woodmansee, Wayne E., 4,261,040, Cl. 364-554.000.

Woods, Gilbert F.: *See*—
Cairns, James; Logan, Robert T.; McGarry, George; Roy, Robert G.; and Woods, Gilbert F., 4,260,605, Cl. 424-243.000.

Woodward, James K.: *See*—
Carr, Albert A.; Cheng, Hsien C.; Horgan, Stephen W.; and Woodward, James K., 4,260,626, Cl. 424-273.00R.

Wortham, Robert F. Marking template for wall coverings. 4,259,785, Cl. 33-189.000.

Wratil, Josef, to Reimbold & Strick GmbH & Co KG. Enameled parts made of heat-resistant metals. 4,260,662, Cl. 428-433.000.

Wright Company, The: *See*—
Rolsten, Robert F., 4,260,341, Cl. 417-454.000.

Wright, Steven A.; and Watts, Donald A., to Monitor Labs, Incorporated. Fluorescent gas analyzer. 4,260,890, Cl. 250-373.000.

Wuerzer, Bruno: *See*—
Plath, Peter; Wuerzer, Bruno; and Rohr, Wolfgang, 4,260,775, Cl. 548-362.000.

Wunderlich, Klaus: *See*—
Schutze, Detlef-Ingo; and Wunderlich, Klaus, 4,260,778, Cl. 549-52.000.

Wurmb, Rolf: *See*—
Ohlinger, Rainer; Falkenstein, Georg; Wurmb, Rolf; and Marx, Matthias, 4,260,554, Cl. 260-453.0SP.

Wynne, John R.: *See*—
Baston, Trevor A. J.; and Wynne, John R., 4,260,121, Cl. 244-213.000.

Xerox Corporation: *See*—
Sun, Kai C. K., 4,260,936, Cl. 318-66.000.

Yabumoyo, Mikio: *See*—
Fujiwara, Tatsuo; Watanabe, Masayasu; Yabumoyo, Mikio; Kanemori, Takaaki; and Seo, Hiroshi, 4,260,356, Cl. 425-311.000.

Yacko, Peter: *See*—
Babuka, Robert; Emmons, William D.; Weiss, Robert L.; and Yacko, Peter, 4,260,210, Cl. 339-91.00R.

Yamada, Koichi; Nakazato, Kunio; Horinouchi, Kazuo; Hamano, Seiichi; and Mouri, Masahide, to Sumitomo Aluminium Smelting Company, Limited. Hollow catalyst carrier and hollow catalyst made of transition-alumina and process for production thereof. 4,260,524, Cl. 252-463.000.

Yamada, Sadahiko: *See*—
Harada, Masato; Ishigaki, Yoshikatsu; Yamada, Sadahiko; Suzuki, Atsushi; Masuda, Jun; Hamazaki, Tadamitsu; Yoshida, Toshiaki; and Fukuda, Kiyoto, 4,260,723, Cl. 526-115.000.

Yamada, Shoji: *See*—
Onoda, Seiichi; Yamada, Shoji; Minai, Yasuo; Maeda, Minoru; Kita, Shin; and Tanaka, Mitsuo, 4,260,883, Cl. 250-226.000.

Yamada, Yasuyuki: *See*—
Shirahata, Ryuji; Kitamoto, Tatsuji; Yamada, Yasuyuki; and Akashi, Goro, 4,260,466, Cl. 204-192.00M.

Yamaguchi, Akihiro; Kobayashi, Tadashi; Yamaguchi, Keizaburo; Osawa, Kisuke; Murakami, Hisamichi; Yamato, Noboru; and Hasegawa, Akira, to Mitsui Toatsu Chemicals Inc.; and Jujo Paper Co. Ltd. Color-developing sheet for pressure-sensitive recording sheets. 4,260,179, Cl. 282-27.500.

Yamaguchi, Keizaburo: *See*—
Yamaguchi, Akihiro; Kobayashi, Tadashi; Yamaguchi, Keizaburo; Osawa, Kisuke; Murakami, Hisamichi; Yamato, Noboru; and Hasegawa, Akira, 4,260,179, Cl. 282-27.500.

Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Terai, Kazuo; and Nagase, Takeshi, 4,260,170, Cl. 280-276.000.

Yamamoto, Hajime; and Shimoyashiki, Shigehiro, to Hitachi, Ltd. Method and apparatus for determining whether a fluid is leaking. 4,259,861, Cl. 73-40.50R.

Yamamoto, Hisao: *See*—
Atsumi, Toshio; Takebayashi, Yoshiaki; Tarumi, Yuzo; and Yamamoto, Hisao, 4,260,774, Cl. 548-336.000.

Yamamoto, Shigehiko: *See*—
Aida, Toshiyuki; Taguchi, Sadanori; Yuito, Isamu; Kawabe, Ushio; Yamamoto, Shigehiko; Honda, Yukio; Shibata, Norio; and Okano, Hiroshi, 4,260,665, Cl. 428-633.000.

Yamamoto, Toru: *See*—
Akiyama, Hiroyuki; Shimoyashiki, Nobuyoshi; Hatakeyama, Hideo; and Yamamoto, Toru, 4,260,572, Cl. 264-53.000.

Yamashita, Haruhisa: *See*—
Hosokawa, Masuo; Yokoyama, Tohei; Mizui, Katsuya; Yamashita, Haruhisa; and Doi, Kouichi, 4,260,478, Cl. 209-139.00A.

Yamato, Noboru: *See*—
Yamaguchi, Akihiro; Kobayashi, Tadashi; Yamaguchi, Keizaburo; Osawa, Kisuke; Murakami, Hisamichi; Yamato, Noboru; and Hasegawa, Akira, 4,260,179, Cl. 282-27.500.

Yamato Scale Company Limited: *See*—
Kakuta, Toshihiro; and Iwasaka, Kunio, 4,260,033, Cl. 177-34.000.

Yamauchi, Yukio; and Tanigawa, Takeshi, to Hochiki Corporation. Physical condition monitoring system for detection in remote places. 4,260,981, Cl. 340-870.110.

Yanagisawa, Wasuke; and Watanabe, Hiroshi, to New Japan Radio Company Ltd. Stripline antenna for microwaves. 4,260,988, Cl. 343-700.0MS.

Yannone, Robert A.: *See*—
Reed, Terry J.; and Yannone, Robert A., 4,259,835, Cl. 60-39.28R.

Yartz, Johnny W., to General Electric Company. Fastening assembly. 4,260,278, Cl. 403-260.000.

Yasuda, Eturo; Segawa, Yoshihiro; and Ohta, Minoru, to Nippon Soken, Inc. Gas detector element. 4,260,978, Cl. 338-34.000.

Yasui, Tokumasa: *See*—
Masuhara, Toshiaki; Minato, Osamu; Sakai, Yoshio; Sasaki, Toshio; Kubo, Masaharu; Nishimura, Kotaro; and Yasui, Tokumasa, 4,261,004, Cl. 357-51.000.

Yasukawa, Masao: *See*—
Nakanishi, Kiyoshi; Ito, Kazuhiko; Okumura, Takeshi; Iezuka, Isamu; and Yasukawa, Masao, 4,259,933, Cl. 123-307.000.

Yasumatsu, Mutsuo; Katayama, Kenji; and Sakamoto, Koichi, to Calpis Food Industry Co., Ltd., The. Preparation of a fermented milk drink. 4,260,636, Cl. 426-34.000.

Yasuoka, Yoshio, to Takayoshi Narisue. Process for producing rubber hydrochloride sheet. 4,260,577, Cl. 264-280.000.

Yee, Hugh Y.: *See*—
Neeley, William E.; and Yee, Hugh Y., 4,260,257, Cl. 356-246.000.

Yokoyama, Tohei: *See*—
Hosokawa, Masuo; Yokoyama, Tohei; Mizui, Katsuya; Yamashita, Haruhisa; and Doi, Kouichi, 4,260,478, Cl. 209-139.00A.

Yonezawa, Masaharu; and Hatanaka, Masayuki, to General Electric Company. Silicone composition produced by extrusion and hot air vulcanization. 4,260,536, Cl. 260-37.0SB.

Yoshida, Kasumi: *See*—
Sindo, Isao; Matsuoka, Yoshio; and Yoshida, Kasumi, 4,260,580, Cl. 422-64.000.

Yoshida Kogyo K. K.: *See*—
Nishiyama, Hissai, 4,259,995, Cl. 139-92.000.

Yoshida, Ryo; Takemoto, Ichiki; Sumida, Seizo; and Kamoshita, Katsuzo, to Sumitomo Chemical Company, Limited. N'-phenyl-N-methylurea derivatives. 4,260,411, Cl. 71-88.000.

Yoshida, Toshiaki: *See*—
Harada, Masato; Ishigaki, Yoshikatsu; Yamada, Sadahiko; Suzuki, Atsushi; Masuda, Jun; Hamazaki, Tadamitsu; Yoshida, Toshiaki; and Fukuda, Kiyoto, 4,260,723, Cl. 526-115.000.

Yoshihiro Iida: *See*—
Iida, Yoshihiro; Shigeta, Haruhiko; and Akimoto, Hisao, 4,259,859, Cl. 73-15.00A.

Yoshimura, Yoshinobu: *See*—
Kakeya, Nobuharu; and Yoshimura, Yoshinobu, 4,260,607, Cl. 424-246.000.

Yoshioka, Fumio, to Toko, Inc. Semiconductor device and method of making the same. 4,260,999, Cl. 357-34.000.

Young, Charles E.; and Will, Stephen A., to J. Ray McDermott & Co., Inc. Installation of an offshore structure. 4,260,291, Cl. 405-205.000.

Young, Charles E.; and Dobson, Charles D., to International Nickel Company Inc., The. Burner for flash smelting furnace. 4,260,364, Cl. 431-160.000.

Young, William D.: *See*—
Jacobson, Walter E.; Kronish, Donald P.; Taylor, Doris B.; and Young, William D., 4,260,687, Cl. 435-301.000.

Youngdale, Ralph A.: *See*—
Pacis, Arnold F.; and Youngdale, Ralph A., 4,260,176, Cl. 280-668.000.

Youngstown Steel Door Company, The: *See*—
Seitz, Robert F., 4,260,046, Cl. 192-8.00R.

Yu, Chen S.: *See*—
Kazan, John; and Yu, Chen S., 4,260,815, Cl. 562-401.000.

Yuito, Isamu: *See*—
Aida, Toshiyuki; Taguchi, Sadanori; Yuito, Isamu; Kawabe, Ushio; Yamamoto, Shigehiko; Honda, Yukio; Shibata, Norio; and Okano, Hiroshi, 4,260,665, Cl. 428-633.000.

Zacher, Wieland: *See*—
Pfleger, Klaus; Zacher, Wieland; Boettcher, Klaus; Skorczyk, Ronald; Buechner, Oskar; and Mietzner, Franz G., 4,260,722, Cl. 526-68.000.

Zaderej, Andrew; and Zaderej, George, to Unitron Corporation. High frequency battery charger. 4,260,943, Cl. 320-21.000.

Zaderej, George: *See*—
Zaderej, Andrew; and Zaderej, George, 4,260,943, Cl. 320-21.000.

Zahnradfabrik Friedrichshafen AG: *See*—
Meyerle, Michael, 4,259,881, Cl. 74-687.000.

Zajdela, Francois: *See*—
Bisagni, Emile R.; Averbeck, Dietrich; Moustacchi, Ethel; and Zajdela, Francois, 4,260,630, Cl. 424-283.000.

Zander, Peter: *See*—
Feistkorn, Jochen; Pohlmann, Edgar; Rothmayer, Walter; Schwarzler, Peter; Steinmetz, Gunter; and Zander, Peter, 4,259,908, Cl. 104-281.000.

Zapata Industries, Inc.: *See*—
Nicholson, John G.; and Campbell, Ian P., 4,260,483, Cl. 209-539.000.

Zawadzki, Thomas: *See*—
Hudgin, Donald E.; and Zawadzki, Thomas, 4,260,548, Cl. 260-346.740.

Zell, Dale R.; and Morningstar, Leroy J., to AMP Incorporated. Transmission cable connector. 4,260,209, Cl. 339-14.00R.

Zenith Radio Corporation: *See*—
Lee, Ronald B., 4,261,014, Cl. 358-166.000.

Zenz, Frederick A., to Ducon Company, Inc., The. Control of solids discharge from pressurized vessel. 4,260,298, Cl. 406-146.000.

Zickendraht, Christian: *See*—
Schwander, Hansrudolf; and Zickendraht, Christian, 4,260,770, Cl. 548-159.000.

Zimmer, Erich: *See*—
Barnert, Eike; Frommelt, Wolfgang; and Zimmer, Erich, 4,259,925, Cl. 118-716.000.

Zoecon Corporation: *See*—
Anderson, Richard J.; Adams, Karen G.; and Henrick, Clive A., 4,260,633, Cl. 424-304.000.

Zoller, Robert A., to Standard Products Company, The. Protective and decorative molding construction. 4,260,655, Cl. 428-31.000.

Zorbalas, George S.: *See*—
Waller, Lloyd E.; and Zorbalas, George S., 4,261,008, Cl. 358-19.000.

Zorzy, Plato: *See*—
DeBenedictis, Angelo P.; and Zorzy, Plato, 4,260,982, Cl. 340-539.000.

Zosel, Kurt, to Studiengesellschaft Kohle MBH. Process for the decaffeination of coffee. 4,260,639, Cl. 426-478.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF APRIL, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bachur, Gerald; and Richardson, George E., to Optical Associates, Inc. Radiation-sensitive control circuit for driving lamp at various power levels. Re. 30,571, Cl. 315-151.000.

Callahan, James L.; Miller, Arthur F.; and Shaw, Wilfrid G., to Standard Oil Company (Ohio), The. Process for preparing aggregates. Re. 30,569, Cl. 264-13.000.

Fitton, Robert C., to J. M. Huber Corporation. Modified, precipitated alumino silicate pigments. Re. 30,568, Cl. 106-306.000.

Horvath, William, to Thiokol Chemical Corporation. Rechargeable sprayer. Re. 30,566, Cl. 222-153.000.

Hurt, Frank K., to Mefcor, Inc. Belt switch. Re. 30,570, Cl. 200-61.390.

J. M. Huber Corporation: *See*—
Fitton, Robert C., Re. 30,568, Cl. 106-306.000.

Kristiansen Cycle Engines Ltd.: *See*—
Kristiansen, Haaken H., Re. 30,565, Cl. 123-43.0AA.

Kristiansen, Haaken H., to Kristiansen Cycle Engines Ltd. Internal combustion engine and operating cycle. Re. 30,565, Cl. 123-43.0AA.

McCreary, Norman B.: *See*—
Meredith, Robert W.; and McCreary, Norman B., Re. 30,567, Cl. 248-642.000.

Mefcor, Inc.: *See*—
Hurt, Frank K., Re. 30,570, Cl. 200-61.390.

Meredith, Robert W.; and McCreary, Norman B. Trolling motor safety mount. Re. 30,567, Cl. 248-642.000.

Miller, Arthur F.: *See*—
Callahan, James L.; Miller, Arthur F.; and Shaw, Wilfrid G., Re. 30,569, Cl. 264-13.000.

Optical Associates, Inc.: *See*—
Bachur, Gerald; and Richardson, George E., Re. 30,571, Cl. 315-151.000.

RCA Corporation: *See*—
Steckler, Steven A., Re. 30,572, Cl. 330-252.000.

Richardson, George E.: *See*—
Bachur, Gerald; and Richardson, George E., Re. 30,571, Cl. 315-151.000.

Shaw, Wilfrid G.: *See*—
Callahan, James L.; Miller, Arthur F.; and Shaw, Wilfrid G., Re. 30,569, Cl. 264-13.000.

Standard Oil Company (Ohio), The: *See*—
Callahan, James L.; Miller, Arthur F.; and Shaw, Wilfrid G., Re. 30,569, Cl. 264-13.000.

Steckler, Steven A., to RCA Corporation. Low distortion signal amplifier arrangement. Re. 30,572, Cl. 330-252.000.

Thiokol Chemical Corporation: *See*—
Horvath, William, Re. 30,566, Cl. 222-153.000.

LIST OF DESIGN PATENTEES

Aderman, Wayne L.; Agnew, Mark C.; and Wilkey, Frank, Jr., to International Business Machines Corporation. Point-of-sale terminal. 258,826, 4-7-81, Cl. D18-4.000.

Adidas Fabrique de Chaussures de Sport: *See*—
Denu, Francis, 258,774, Cl. D2-320.000.

Agnew, Mark C.: *See*—
Aderman, Wayne L.; Agnew, Mark C.; and Wilkey, Frank, Jr., 258,826, Cl. D18-4.000.

Aktiebolaget Electrolux: *See*—
Wallgren, Sonny O., 258,822, Cl. D15-89.000.

American Standard Inc.: *See*—
Saporito, Dominic A.; and Genaro, Donald M., 258,835, Cl. D23-25.000.
Saporito, Dominic A.; and Genaro, Donald M., 258,836, Cl. D23-26.000.

Andersson, Lars M., to HAFA Fabriks AB. Bathroom cabinet. 258,781, 4-7-81, Cl. D6-104.000.

B.P.T.S.p.A.: *See*—
Plozner, Lisio, 258,840, Cl. D27-39.000.

Baker Perkins Holdings, Ltd.: *See*—
Zrobek, Roman, 258,828, Cl. D18-22.000.

Basile, Peter A.: *See*—
Halbeisen, Jack; Basile, Peter A.; and Bochmann, Carl E., 258,800, Cl. D9-300.000.

Beaver, Ted L., to Continental Group, Inc., The. Bottle or similar article. 258,802, 4-7-81, Cl. D9-378.000.

Beising, Frank, to Marine Sonics Corporation. Hand held radar unit. 258,810, 4-7-81, Cl. D10-46.000.

Bochmann, Carl E.: *See*—
Halbeisen, Jack; Basile, Peter A.; and Bochmann, Carl E., 258,800, Cl. D9-300.000.

Bosch Siemens Hausgerate GmbH: *See*—
Reichl, Ernst, 258,807, Cl. D10-106.000.

Bossons, William R., to W. H. Bossons (Sales) Limited. Advertising display stand. 258,782, 4-7-81, Cl. D6-140.000.

Bowman, George E.: *See*—
Skyer, Robert A.; and Bowman, George E., 258,823, Cl. D15-30.000.

Box, Theodor M. Beverage case. 258,803, 4-7-81, Cl. D99-49.000.

Broyles, Wayne R., to Minichillo, Ronald A., a part interest. Ladder step. 258,839, 4-7-81, Cl. D25-69.000.

Campbell, Paul R.; and Pardo, John, to Procter & Gamble Company, The. Bottle. 258,801, 4-7-81, Cl. D9-409.000.

Cartner, Donald W.: *See*—
Hopkins, Evan L.; and Cartner, Donald W., 258,779, Cl. D4-06.000.

Chevassus, Alain, to Lefebure Isolants Reunis. Cosmetic box. 258,841, 4-7-81, Cl. D28-83.000.

Chin, Arthur W., to Texas Instruments Incorporated. Case for printing calculator or the like. 258,827, 4-7-81, Cl. D18-7.000.

Clorox Company, The: *See*—
Halbeisen, Jack; Basile, Peter A.; and Bochmann, Carl E., 258,800, Cl. D9-300.000.

Continental Group, Inc., The: *See*—
Beaver, Ted L., 258,802, Cl. D9-378.000.

Cooper Industries Inc.: *See*—
Ferguson, William C., 258,798, Cl. D8-57.000.

Coots, Warren R. Adjustable foal feeder. 258,844, 4-7-81, Cl. D30-13.000.

Cottrell, Don J.; and Cottrell, Don M. Vehicle tie-down track assembly. 258,815, 4-7-81, Cl. D12-94.000.

Cottrell, Don M.: *See*—
Cottrell, Don J.; and Cottrell, Don M., 258,815, Cl. D12-94.000.

Cox, Morris E. Wrist pen holder. 258,812, 4-7-81, Cl. D11-2.000.

Davis, G. B., Jr.: *See*—
Davis, George B., Jr., 258,797, Cl. D8-14.100.

Davis, George B., Jr., to Davis, G. B., Jr. Hand held electric caulking gun. 258,797, 4-7-81, Cl. D8-14.100.

Debottlenecking Limited: *See*—
McKeown, Kevin J., 258,813, Cl. D12-64.000.

deHaseth, John, to Jonee, Inc. Makeup center. 258,842, 4-7-81, Cl. D28-68.000.

Denu, Francis, to Adidas Fabrique de Chaussures de Sport. Shoe sole. 258,774, 4-7-81, Cl. D2-320.000.

Diskin, Stephen P. Clock. 258,808, 4-7-81, Cl. D10-15.000.

Dunlop Limited: *See*—
Popplewell, Frank W., 258,831, Cl. D21-207.000.

Edson, Sydney, to Howard Displays, Inc. Counter display stand. 258,784, 4-7-81, Cl. D6-157.000.

Essex, John D.: *See*—
Wareham, Richard A.; and Essex, John D., 258,821, Cl. D15-54.000.

Evans, Barbara A. Combined pin cushion, thimble holder and scissors holder. 258,776, 4-7-81, Cl. D3-21.000.

Ferguson, William C., to Cooper Industries Inc. Tread nipper or the like. 258,798, 4-7-81, Cl. D8-57.000.

Firestone Tire & Rubber Company, The: *See*—
Headley, William G.; Rasmussen, Ralph J.; and Richardson, Stanley M., Jr., 258,816, Cl. D12-129.000.

Frederick, Roderick J. Market check out stand. 258,783, 4-7-81, Cl. D6-143.000.

Funabashi, Genichi, to Kubota, Ltd. Agricultural tractor. 258,824, 4-7-81, Cl. D15-23.000.

Gambro Dialysatoren GmbH and Co. KG: *See*—
Spranger, Kurt; and Nestell, Bengt, 258,837, Cl. D24-21.000.

Gauthier, Francis R. Infant carrier. 258,778, 4-7-81, Cl. D3-31.000.

Genaro, Donald M.: *See—*
Saporito, Dominic A.; and Genaro, Donald M., 258,835, Cl. D23-25.000.
Saporito, Dominic A.; and Genaro, Donald M., 258,836, Cl. D23-26.000.

HAFA Fabriks AB: *See—*
Andersson, Lars M., 258,781, Cl. D6-104.000.

Halbeisen, Jack; Basile, Peter A.; and Bochmann, Carl E., to Clorox Company, The. Dispensing container for fluids. 258,800, 4-7-81, Cl. D9-300.000.

Halburian, Armen. Solid bar chime. 258,809, 4-7-81, Cl. D10-116.000.

Hamada, Masanori, to Matsushita Electric Industrial Co., Ltd. Digital clock radio. 258,820, 4-7-81, Cl. D14-73.000.

Hardy, Terence: *See—*
Litchfield, Leon G.; and Hardy, Terence, 258,792, Cl. D6-191.000.

Hatch, James E.; and Lubin, Stephen H., to Singer Company, The. Work-task simulator cabinet. 258,785, 4-7-81, Cl. D6-167.000.

Headley, William G.; Rasmussen, Ralph J.; and Richardson, Stanley M., Jr., to Firestone Tire & Rubber Company, The. Stroller. 258,816, 4-7-81, Cl. D12-129.000.

Hoover Company, The: *See—*
Wareham, Richard A.; and Essex, John D., 258,821, Cl. D15-54.000.

Hopkins, Evan L.; and Cartner, Donald W., to Hopkins Manufacturing Corporation. Combined brush and scraper to be used in cleaning windshields. 258,779, 4-7-81, Cl. D4-06.000.

Hopkins Manufacturing Corporation: *See—*
Hopkins, Evan L.; and Cartner, Donald W., 258,779, Cl. D4-06.000.

Howard Displays, Inc.: *See—*
Edson, Sydney, 258,784, Cl. D6-157.000.

International Business Machines Corporation: *See—*
Aderman, Wayne L.; Agnew, Mark C.; and Wilkey, Frank, Jr., 258,826, Cl. D18-4.000.

International Jensen Incorporated: *See—*
Matsuda, Hari, 258,819, Cl. D14-76.000.

International Playtex, Inc.: *See—*
Stern, Harold, 258,770, Cl. D2-4.000.

John H. Best & Sons, Inc.: *See—*
Ovitz, Ernest G., III, 258,790, Cl. D6-186.000.

Johnson, Thomas; and Witte, Paul A., to M. Black Manufacturing Company. Battery cable clamp. 258,818, 4-7-81, Cl. D13-10.000.

Jonee, Inc.: *See—*
deHaseth, John, 258,842, Cl. D28-68.000.

Kailey, Alexander. Spool holder. 258,777, 4-7-81, Cl. D3-24.000.

Kinsey, Albert L. Combined sink and drainboard unit. 258,834, 4-7-81, Cl. D23-60.000.

Kubota, Ltd.: *See—*
Funabashi, Genichi, 258,824, Cl. D15-23.000.

L. B. (Plastics) Limited: *See—*
Litchfield, Leon G.; and Hardy, Terence, 258,792, Cl. D6-191.000.

Lee, Robert L. Dental articulator. 258,838, 4-7-81, Cl. D24-10.000.

Lefebure Isolants Reunis: *See—*
Chevassus, Alain, 258,841, Cl. D28-83.000.

Leonardi, Gaetano. Necktie. 258,775, 4-7-81, Cl. D2-354.000.

Litchfield, Leon G.; and Hardy, Terence, to L. B. (Plastics) Limited. Drawer. 258,792, 4-7-81, Cl. D6-191.000.

Lubin, Stephen H.: *See—*
Hatch, James E.; and Lubin, Stephen H., 258,785, Cl. D6-167.000.

M. Black Manufacturing Company: *See—*
Johnson, Thomas; and Witte, Paul A., 258,818, Cl. D13-10.000.

Marine Sonics Corporation: *See—*
Beising, Frank, 258,810, Cl. D10-46.000.

Matsuda, Hari, to International Jensen Incorporated. Control knob for radio receivers or the like. 258,819, 4-7-81, Cl. D14-76.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Hamada, Masanori, 258,820, Cl. D14-73.000.

McCutchen, George R. Bale tie. 258,804, 4-7-81, Cl. D8-394.000.

McKeown, Kevin J., to Debottlenecking Limited. Boat. 258,813, 4-7-81, Cl. D12-64.000.

Meadows, Norman H. Tennis ball serving aid. 258,832, 4-7-81, Cl. D21-204.000.

Mericle, Marjorie M. A.: *See—*
Mericle, Ruth M.; and Mericle, Marjorie M. A., 258,806, Cl. D10-44.000.

Mericle, Ruth M.; and Mericle, Marjorie M. A. Toothshaped sand timer. 258,806, 4-7-81, Cl. D10-44.000.

Miller, Michael J. Framed mirror. 258,794, 4-7-81, Cl. D6-240.000.

Minichillo, Ronald A.: *See—*
Broyles, Wayne R., 258,839, Cl. D25-69.000.

Nestell, Bengt: *See—*
Spranger, Kurt; and Nestell, Bengt, 258,837, Cl. D24-21.000.

New Balance Athletic Shoe, Inc.: *See—*
Norton, Edward J.; and Werman, Jonathan H., 258,772, Cl. D2-309.000.

Norton, Edward J.; and Werman, Jonathan H., to New Balance Athletic Shoe, Inc. Sport shoe. 258,772, 4-7-81, Cl. D2-309.000.

Ovitz, Ernest G., III, to John H. Best & Sons, Inc. Sample display shelving unit. 258,790, 4-7-81, Cl. D6-186.000.

Pardo, John: *See—*
Campbell, Paul R.; and Pardo, John, 258,801, Cl. D9-409.000.

Parker, Frederick A.: *See—*
Riccio, Louis M.; and Parker, Frederick A., 258,843, Cl. D29-7.000.

Paulides, Elias A. Partitioned cup. 258,796, 4-7-81, Cl. D7-10.000.

Plozner, Lisio, to B.P.T.S.p.A. Gas-lighter. 258,840, 4-7-81, Cl. D27-39.000.

Popplewell, Frank W., to Dunlop Limited. Shuttlecock. 258,831. 4-7-81, Cl. D21-207.000.

Procter & Gamble Company, The: *See—*
Campbell, Paul R.; and Pardo, John, 258,801, Cl. D9-409.000.
Zamorski, Ronald J., 258,795, Cl. D7-9.000.

Quabaug Rubber Company: *See—*
Russell, Robert E., 258,773, Cl. D2-320.000.

Quinn, Peter T., to Rollei of America, Inc. Electronic flash device. 258,825, 4-7-81, Cl. D16-42.000.

Rasmussen, Ralph J.: *See—*
Headley, William G.; Rasmussen, Ralph J.; and Richardson, Stanley M., Jr., 258,816, Cl. D12-129.000.

Reichl, Ernst, to Bosch Siemens Hausgerate GmbH. Room security device. 258,807, 4-7-81, Cl. D10-106.000.

Rexnord Inc.: *See—*
Riccio, Louis M.; and Parker, Frederick A., 258,843, Cl. D29-7.000.

Riccio, Louis M.; and Parker, Frederick A., to Rexnord Inc. Rebreathing apparatus. 258,843, 4-7-81, Cl. D29-7.000.

Richardson, Stanley M., Jr.: *See—*
Headley, William G.; Rasmussen, Ralph J.; and Richardson, Stanley M., Jr., 258,816, Cl. D12-129.000.

Rinz, Gustave R. Pillow. 258,793, 4-7-81, Cl. D6-201.000.

Rite Autotronics Corporation: *See—*
Schwartz, Edwin L., 258,805, Cl. D10-75.000.

Rollei of America, Inc.: *See—*
Quinn, Peter T., 258,825, Cl. D16-42.000.

Russell, Robert E., to Quabaug Rubber Company. Shoe sole. 258,773, 4-7-81, Cl. D2-320.000.

Saporito, Dominic A.; and Genaro, Donald M., to American Standard Inc. Faucet unit. 258,835, 4-7-81, Cl. D23-25.000.

Saporito, Dominic A.; and Genaro, Donald M., to American Standard Inc. Combined bathtub and shower fixture unit. 258,836, 4-7-81, Cl. D23-26.000.

Schwartz, Edwin L., to Rite Autotronics Corporation. Digital engine analyzer. 258,805, 4-7-81, Cl. D10-75.000.

Sigg, Bror-Helge. Toy building block. 258,830, 4-7-81, Cl. D21-108.000.

Silverman, Leslie M. Sign. 258,829, 4-7-81, Cl. D20-10.000.

Singer Company, The: *See—*
Hatch, James E.; and Lubin, Stephen H., 258,785, Cl. D6-167.000.

Skyer, Robert A.; and Bowman, George E. Tractor cab. 258,823, 4-7-81, Cl. D15-30.000.

Spranger, Kurt; and Nestell, Bengt, to Gambro Dialysatoren GmbH and Co. KG. Dialyzer cartridge. 258,837, 4-7-81, Cl. D24-21.000.

Stern, Alfred J. Dowel pin. 258,799, 4-7-81, Cl. D8-382.000.

Stern, Harold, to International Playtex, Inc. Panty girdle. 258,770, 4-7-81, Cl. D2-4.000.

Stewart, Harry. Combined flush mounted tow bar and brush guard. 258,814, 4-7-81, Cl. D12-162.000.

Sundman, Nils G. Combined pallet and container. 258,817, 4-7-81, Cl. D12-53.000.

Texas Instruments Incorporated: *See—*
Chin, Arthur W., 258,827, Cl. D18-7.000.

Vaccari, Franco. Ski boot. 258,771, 4-7-81, Cl. D2-276.000.

Verdesca, Joseph T. Combined table and recessed storage unit. 258,786, 4-7-81, Cl. D6-179.000.

Verdesca, Joseph T. Combined work table and storage shelf unit. 258,787, 4-7-81, Cl. D6-179.000.

Verdesca, Joseph T. Combined work table and equipment storage unit. 258,788, 4-7-81, Cl. D6-179.000.

Verdesca, Joseph T. Table. 258,789, 4-7-81, Cl. D6-179.000.

Verdesca, Joseph T. Shelf unit for storing electrical equipment. 258,791, 4-7-81, Cl. D6-186.000.

W. H. Bossons (Sales) Limited: *See—*
Bossons, William R., 258,782, Cl. D6-140.000.

Wallgren, Sonny O., to Aktiebolaget Electrolux. Wall passage fitting for gas operated refrigerator. 258,822, 4-7-81, Cl. D15-89.000.

Wareham, Richard A.; and Essex, John D., to Hoover Company, The. Suction cleaner or the like. 258,821, 4-7-81, Cl. D15-54.000.

Wasserman, Theodore L. Christmas tree stand. 258,780, 4-7-81, Cl. D6-105.000.

Werman, Jonathan H.: *See—*
Norton, Edward J.; and Werman, Jonathan H., 258,772, Cl. D2-309.000.

Wilkey, Frank, Jr.: *See—*
Aderman, Wayne L.; Agnew, Mark C.; and Wilkey, Frank, Jr., 258,826, Cl. D18-4.000.

Witte, Paul A.: *See—*
Johnson, Thomas; and Witte, Paul A., 258,818, Cl. D13-10.000.

Yano, Hiroshi. Fishing jig with fin. 258,833, 4-7-81, Cl. D22-27.000.

You, Chi T. Combined electronic clock and perpetual calendar. 258,811, 4-7-81, Cl. D10-3.000.

Zamorski, Ronald J., to Procter & Gamble Company, The. Mug. 258,795, 4-7-81, Cl. D7-9.000.

Zrobek, Roman, to Baker Perkins Holdings, Ltd. Ink transfer roller. 258,828, 4-7-81, Cl. D18-22.000.

LIST OF PLANT PATENTEES

Conard-Pyle Company, The: *See*—
Meilland, Marie L., 4,681, Cl. 10.000.
Meilland, Marie L., 4,682, Cl. 10.000.
Meserve, Kathleen K., 4,685, Cl. 65.000.

Driedger, Jacob J.: *See*—
Patmore, Richard H., 4,684, Cl. 51.000.

Herrera V., Camilo; and Saavedra, Reinaldo, to Jardines de Lose Andes Ltda. Chrysanthemum plant. 4,686, 4-7-81, Cl. 76.000.

Jardines de Lose Andes Ltda.: *See*—
Herrera V., Camilo; and Saavedra, Reinaldo, 4,686, Cl. 76.000.

Meilland, Marie L., to Conard-Pyle Company, The. Miniature rose plant—Meicubasi variety. 4,681, 4-7-81, Cl. 10.000.

Meilland, Marie L., to Conard-Pyle Company, The. Miniature rose plant—Meijikatar variety. 4,682, 4-7-81, Cl. 10.000.

Meserve, Kathleen K., to Conard-Pyle Company, The. Ilex plant - mesid variety. 4,685, 4-7-81, Cl. 65.000.

Patmore, Richard H., to Driedger, Jacob J. Green Ash tree. 4,684, 4-7-81, Cl. 51.000.

Saavedra, Reinaldo: *See*—
Herrera V., Camilo; and Saavedra, Reinaldo, 4,686, Cl. 76.000.

Smith, Earl; and Wimer, Alba E. Almond tree. 4,683, 4-7-81, Cl. 30.000.

Wimer, Alba E.: *See*—
Smith, Earl; and Wimer, Alba E., 4,683, Cl. 30.000.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 7TH DAY OF APRIL, 1981

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Balyoz, John; and Gruodis, Algirdas J. Integrated circuit layout utilizing separated active circuit and wiring regions. T100,501, 4-7-81, Cl. 29-577.00C.

Gruodis, Algirdas J.: *See*—
Balyoz, John; and Gruodis, Algirdas J., T100,501, Cl. 29-577.00C.

Hattori, Tadashi: *See*—
Kobashi, Mamoru; Kawase, Toru; Hattori, Tadashi; and Ueno, Yoshiki, T100,502, Cl. 123-416.000.

Kawase, Toru: *See*—
Kobashi, Mamoru; Kawase, Toru; Hattori, Tadashi; and Ueno, Yoshiki, T100,502, Cl. 123-416.000.

Kobashi, Mamoru; Kawase, Toru; Hattori, Tadashi; and Ueno, Yoshiki. Electronic ignition control apparatus. T100,502, 4-7-81, Cl. 123-416.000.

Morrow, Duane F.; and Wu, Yao H. Triazolo[4,3-a]pyridin-3(2H)-ones. T100,505, 4-7-81, Cl. 542-444.000.

Neu, Gerald D.: *See*—
Taylor, Marcia A.; and Neu, Gerald D., T100,503, Cl. 426-549.000.

Sublett, Bobby J. Copolyester hot-melt adhesives. T100,504, 4-7-81, Cl. 528-302.000.

Taylor, Marcia A.; and Neu, Gerald D. Liquid emulsifier for bread. T100,503, 4-7-81, Cl. 426-549.000.

Ueno, Yoshiki: *See*—
Kobashi, Mamoru; Kawase, Toru; Hattori, Tadashi; and Ueno, Yoshiki, T100,502, Cl. 123-416.000.

Wu, Yao H.: *See*—
Morrow, Duane F.; and Wu, Yao H., T100,505, Cl. 542-444.000.

CLASSIFICATION OF PATENTS

ISSUED APRIL 7, 1981

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

6 4,259,747
9 4,259,748
234 4,259,750
244 4,259,749
269 4,259,751

CLASS 3

1.5 4,259,753
1.91 4,259,752

CLASS 4

443 4,259,754

CLASS 5

58 4,259,755
81 B 4,259,756
434 4,259,757

CLASS 8

481 4,260,390
491.1 4,260,389
519 4,260,391
646 4,260,388

CLASS 10

10 R 4,259,758

CLASS 14

16.1 4,259,759

CLASS 15

93 A 4,259,760
143 R 4,259,761

CLASS 16

86 B 4,259,762
154 4,259,763

CLASS 19

41 4,259,764
80 R 4,259,765
150 4,259,766

CLASS 23

230 B 4,260,393
230 R 4,260,392

CLASS 24

73 SM 4,259,767

CLASS 28

254 4,259,768
283 4,259,769
294 4,259,770

CLASS 29

33 F 4,259,771
240 4,259,772
4,259,773
263 4,259,774
407 4,259,775
423 4,259,776
526 R 4,259,777
560 4,259,778
571 4,259,779
808 4,259,780

CLASS 30

43.6 4,259,781
276 4,259,782
384 4,259,783

CLASS 33

1 K 4,259,784
189 4,259,785

CLASS 34

201 4,259,787

CLASS 36

7.2 4,259,791
28 4,259,792
125 4,259,793

CLASS 37

42 VL 4,259,794
66 4,259,795

CLASS 38

15 4,259,796

CLASS 40

1.5 4,259,797
10 R 4,259,798
159 4,259,799
444 4,259,800
449 4,259,801
513 4,259,802
607 4,259,803

CLASS 44

1 SR 4,260,394
16 C 4,260,395

CLASS 46

16 4,259,804
44 4,259,805
4,259,806
161 4,259,807
240 4,259,808
249 4,259,809

CLASS 49

118 4,259,810
356 4,259,811
462 4,259,812
504 4,259,813

CLASS 51

122 4,259,814
205 R 4,259,815
298 4,260,396
307 4,260,397

CLASS 52

33 4,259,816
96 4,259,817
208 4,259,818
222 4,259,819
303 4,259,820
309.1 4,259,821
334 4,259,822
400 4,259,823
612 4,259,824
645 4,259,825

CLASS 53

543 4,259,826
564 4,259,827

CLASS 55

41 4,260,398
74 4,260,399
290 4,260,400
339 4,260,401
505 4,260,402

CLASS 56

9 4,259,828
10.2 4,259,829
10.8 4,259,830
98 4,259,831
202 4,259,832
330 4,259,833
504 4,259,834

CLASS 60

39.28 R 4,259,835
39.33 4,259,836
39.55 4,259,837
224 4,259,838
261 4,259,839
602 4,259,840
669 4,259,841
757 4,259,842

CLASS 62

3 4,259,843
6 4,259,844
48 4,259,846
93 4,259,847
113 4,259,848
209 4,259,845
271 4,259,849

CLASS 63

13 4,259,850

CLASS 65

11 W 4,260,403
27 4,260,404
42 4,260,405
43 4,260,406
99 A 4,260,407
106 4,260,408
273 4,260,409

CLASS 66

132 T 4,259,851
4,259,852

CLASS 68

5 D 4,259,853

CLASS 69

21 4,259,854
30 4,259,855

CLASS 70

70 4,259,856
456 B 4,259,857

CLASS 71

76 4,260,410
88 4,260,411

CLASS 72

391 4,259,858

CLASS 73

15 A 4,259,859
17 R 4,259,860
40.5 R 4,259,861
73 4,259,862
170 R 4,259,864
304 C 4,259,865
355 R 4,259,866
421.5 R 4,259,867
597 4,259,868
761 4,259,869
861.25 4,259,870
862.4 4,259,863

CLASS 74

5.46 4,259,871
13 4,259,872
462 4,259,875
469 4,259,876
473 R 4,259,877
491 4,259,878
501.5 R 4,259,879
594.2 4,259,880
687 4,259,881
862 4,259,882

CLASS 75

35 4,260,412
58 4,260,413
60 4,260,414
4,260,415
125 4,260,416
130 R 4,260,417
142 4,260,419

CLASS 81

62 4,259,883

CLASS 82

1.5 4,259,884
4 R 4,259,885

CLASS 83

425.2 4,259,886
437 4,259,887

CLASS 84

1.22 4,259,888

CLASS 89

12 4,259,891
16 4,259,892

CLASS 91

369 B 4,259,893
487 4,259,894

CLASS 92

78 4,259,895

CLASS 98

2.03 4,259,896
40 D 4,259,898
40 DL 4,259,897
115 SB 4,259,899

CLASS 100

88 4,259,900

CLASS 101

42 4,259,901
91 4,259,902
93.03 4,259,903
415.1 4,259,904
467 4,259,905

CLASS 102

56 SC 4,259,906

CLASS 104

48 4,259,907
281 4,259,908

CLASS 106

74 4,260,420
103 4,260,421
111 4,260,422
273 R 4,260,423
306 Re.30,568
309 4,260,424

CLASS 108

12 4,259,909

CLASS 110

211 4,259,910
245 4,259,911

CLASS 111

77 4,259,912

CLASS 112

158 E 4,259,913
184 4,259,914
217.4 4,259,915
221 4,259,916

CLASS 114

91 4,259,917

CLASS 116

200 4,259,918

CLASS 118

47 4,259,919
116 4,259,920
206 4,259,921
500 4,259,922
622 4,259,923
706 4,259,924
716 4,259,925

CLASS 119

2 4,259,926
51 R 4,259,927

CLASS 122

24 4,259,928

CLASS 123

43 AA Re.30,565
43 C 4,259,929
179 J 4,259,930
198 F 4,259,931
209 4,259,932
307 4,259,933
424 4,259,934
478 4,259,935
556 4,259,936
557 4,259,937
599 4,259,938
605 4,259,939

CLASS 125

11 CD 4,259,940

CLASS 126

120 4,259,941
292 4,259,943
299 D 4,259,944
299 E 4,259,945
442 4,259,942
443 4,259,946

CLASS 128

1 R 4,259,947
6 4,259,948
77 4,259,949
89 R 4,259,950
200.14 4,259,951
214 D 4,259,952
233 4,259,953
248 4,259,954
269 4,259,955
272 4,259,956
287 4,259,957
4,259,958
337 4,259,959
349 B 4,259,960
400 4,259,961
419 P 4,259,962
635 4,259,963
638 4,259,964
640 4,259,965
706 4,259,966
720 4,259,967
724 4,259,968

CLASS 131

178 4,259,971
278 4,259,969
330 R 4,259,970

CLASS 132

9 4,259,972
48 R 4,259,973

CLASS 134

2 4,260,425
29 4,260,426

CLASS 135

24 4,259,974

CLASS 136

255 4,260,427
256 4,260,429
260 4,260,428

CLASS 137

1 4,259,975
13 4,259,976
4,259,977
54 4,259,978
315 4,259,979
375 4,259,980
4,259,981
392 4,259,982
512 4,259,983
533.31 4,259,984
595 4,259,985
596.12 4,259,986
606 4,259,987
812 4,259,988

CLASS 138

109 4,259,989
113 4,259,990
127 4,259,991
138 4,259,992
149 4,259,993

CLASS 139

1 R 4,259,994
92 4,259,995
437 4,259,996
448 4,259,997
450 4,259,998

CLASS 141

57 4,259,999
59 4,260,000

CLASS 144

144 A 4,260,001
230 4,260,002

CLASS 148

1.5 4,260,430
4,260,431
2 4,260,432
9.5 4,260,433
32.5 4,260,435
126 4,260,418
174 4,260,436

CLASS 149

19.9 4,260,437

CLASS 150

11 4,260,003
30 4,260,004

CLASS 152

362 R 4,260,006

CLASS 156

69 4,260,438
98 4,260,439
163 4,260,440
166 4,260,441
207 4,260,442
220 4,260,443
252 4,260,444
276 4,260,445
443 4,260,446
494 4,260,447
605 4,260,448
628 4,260,449
656 4,260,450
664 4,260,451

CLASS 162

23 4,260,452
105 4,260,453
181 C 4,260,454

CLASS 164

64 4,260,007
270 4,260,009
431 4,260,008
445 4,260,010

CLASS 165

35 4,260,011
51 4,260,012
75 4,260,013
105 4,260,014
110 4,260,015

CLASS 166

74 4,260,016
154 4,260,017
272 4,260,018
274 4,260,019
305 R 4,260,020
318 4,260,021
339 4,260,022

CLASS 169

57 4,260,023

CLASS 172

12 4,260,024
4,260,025
25 4,260,026
45 4,260,027
298 4,260,028

CLASS 173

1 4,260,029

CLASS 174

41 4,260,848
51 4,260,849
52 R 4,260,850
107 4,260,851

CLASS 175

4,260,030
4,260,031
4,260,032

CLASS 176

9 4,260,455

CLASS 177

34 4,260,033
211 4,260,034

CLASS 178

19 4,260,852
46 4,260,853

CLASS 179

6.09 4,260,854
7.1 R 4,260,855
98 4,260,856
99 R 4,260,857
175.3 R 4,260,859

CLASS 180

6.5 4,260,035
182 4,260,036

CLASS 181

204 4,260,037

CLASS 182

155 4,260,038
164 4,260,039
181 4,260,040

CLASS 185

40 R 4,260,041

CLASS 188

330 4,260,042

CLASS 190

49 4,260,043

CLASS 192

5 4,260,044
8 R 4,260,045
4,260,046
70.14 4,260,047
107 C 4,260,048
111 A 4,260,049

CLASS 198

508 4,260,050
760 4,260,051
763 4,260,052
812 4,260,053

CLASS 200

6 R 4,260,860
42 T 4,260,861
61.39 Re.30,570
81 R 4,260,862
144 B 4,260,864
144 R 4,260,863
320 4,260,865
331 4,260,866

CLASS 201

12 4,260,456

CLASS 202

121 4,260,458
160 4,260,457
200 4,260,459
227 4,260,460

CLASS 203

7 4,260,461
22 4,260,462

CLASS 204

98 4,260,463
158 HA 4,260,464
159.23 4,260,465
192 M 4,260,466
195 H 4,260,467
260 4,260,468
265 4,260,469
286 4,260,470

CLASS 206

0.5 4,260,054
232 4,260,055
370 4,260,056
379 4,260,057
443 4,260,058
588 4,260,059
622 4,260,060
626 4,260,061

CLASS 208

8 LE 4,260,471
4,260,472
14 4,260,473
57 4,260,474
113 4,260,475
207 4,260,479
321 4,260,476

CLASS 209

38 4,260,477
139 A 4,260,478
211 4,260,480
315 4,260,481
480 4,260,482
539 4,260,483
582 4,260,062

CLASS 210

96.1 4,260,486
190 4,260,487
259 4,260,488
386 4,260,492
620 4,260,490
714 4,260,493
720 4,260,491
721 4,260,494
728 4,260,485
771 4,260,489
772 4,260,495
780 4,260,496

CLASS 211

4 4,260,063

CLASS 212

231 4,260,064

CLASS 215

2 4,260,065
12 R 4,260,066
225 4,260,067

CLASS 219

70 4,260,867
86.31 4,260,868
124.31 4,260,869
124.33 4,260,870
222 4,260,871
270 4,260,872
273 4,260,873
290 4,260,874
364 4,260,875
497 4,260,876

CLASS 220

221 4,260,068
331 4,260,069
335 4,260,070
445 4,260,071

CLASS 221

92 4,260,072

CLASS 222

1 4,260,073
4,260,074
5 4,260,075
46 4,260,076
137 4,260,077
153 Re.30,566
184 4,260,078
209 4,260,079
340 4,260,082
402.14 4,260,080
600 4,260,081

CLASS 223

111 4,260,083

CLASS 224

32 A 4,260,084
32 R 4,260,085
36 4,260,086
163 4,260,087
202 4,260,088
206 4,260,089
277 4,260,090
311 4,260,091

CLASS 227

8 4,260,092
120 4,260,093

CLASS 228

112 4,260,094
130 4,260,095
158 4,260,096

CLASS 229

16 R 4,260,097
31 R 4,260,098
4,260,099
39 R 4,260,100
41 C 4,260,101

CLASS 234

112 4,260,102

CLASS 235

92 AC 4,260,878
92 DN 4,260,877
449 4,260,879
454 4,260,880
493 4,260,881

CLASS 237

5 4,260,103

CLASS 238

10 E 4,260,104
303 4,260,105

CLASS 239

11 4,260,106
74 4,260,107
171 4,260,108
189 4,260,109
404 4,260,110
450 4,260,111
533.8 4,260,112

CLASS 241

28 4,260,113
37.5 4,260,114
236 4,260,115

CLASS 242

55 4,260,116
55.3 4,260,117
107.4 A 4,260,118
157 R 4,260,119
201 4,260,120

CLASS 244

213 4,260,121

CLASS 248

71 4,260,122
74 R 4,260,123
449 4,260,124
642 Re.30,567
675 4,260,125

CLASS 249

20 4,260,126
207 4,260,127

CLASS 250

205 4,260,882
226 4,260,883
277 R 4,260,885
288 4,260,886
315.2 4,260,887
324 4,260,884
330 4,260,888
358 T 4,260,889
373 4,260,890
385 4,260,891
388 4,260,892
397 4,260,893
445 T 4,260,894
4,260,895
468 4,260,896
492 A 4,260,897
505 4,260,898
563 4,260,899
578 4,260,900

CLASS 251

58 4,260,128
77 4,260,129
113 4,260,130
214 4,260,131
297 4,260,132
339 4,260,133
367 4,260,134

CLASS 252

8.75 4,260,497
28 4,260,498
32.5 4,260,499
33 4,260,500
47.5 4,260,501
48.6 4,260,503
49.5 4,260,502
73 4,260,504
77 4,260,505
78.1 4,260,506
99 4,260,508
121 4,260,507
171 4,260,509
4,260,510
174.11 4,260,511
4,260,512
174.19 4,260,513
182 4,260,514
316 4,260,515
408 4,260,516
4,260,517
411 R 4,260,484
411 S 4,260,518
431 L 4,260,519
437 4,260,520
443 4,260,521
447 4,260,523
463 4,260,524
521 4,260,525
522 R 4,260,526
4,260,527
525 4,260,528
547 4,260,529

CLASS 254

1 4,260,135
380 4,260,136

CLASS 256

10 4,260,137
19 4,260,138

CLASS 260

29.3 4,260,530
29.6 E 4,260,531
29.6 HN 4,260,532
29.6 TA 4,260,533
31.8 R 4,260,534
33.6 UA 4,260,535
37 SB 4,260,536
40 R 4,260,538
42.14 4,260,539
42.21 4,260,540
45.75 R 4,260,542
45.8 NT 4,260,541
45.85 B 4,260,537
245.2 T 4,260,543
326.13 C 4,260,544
4,260,545
346.71 4,260,547
346.74 4,260,548
346.76 4,260,546
397.2 4,260,549
410 4,260,550
410.6 4,260,551
429.7 4,260,552
449 M 4,260,553
453 SP 4,260,554
455 R 4,260,557
465 E 4,260,555
465.5 R 4,260,556
507 R 4,260,558
513.6 4,260,559
543 R 4,260,560
544 F 4,260,561

CLASS 261

23 R 4,260,563

CLASS 264

2.2 4,260,564
13 Re.30,569
4,260,565
22 4,260,566
25 4,260,567
37 4,260,568
40.7 4,260,578
45.4 4,260,569
46.6 4,260,570
53 4,260,571
4,260,572
68 4,260,573
111 4,260,582
129 4,260,574
154 4,260,575
257 4,260,576
280 4,260,577

CLASS 266

154 4,260,139
246 4,260,140
287 4,260,141

CLASS 267

9 A 4,260,142
148 4,260,143

CLASS 270

14 4,260,144
54 4,260,145

CLASS 271

94 4,260,146
182 4,260,147
219 4,260,148
236 4,260,149

CLASS 273

26 B 4,260,150
32 H 4,260,151
85 D 4,260,152
89 4,260,153
120 R 4,260,155
127 R 4,260,156
138 A 4,260,159
177 R 4,260,157
267 4,260,158
408 4,260,160
411 4,260,154

CLASS 277

34 4,260,164
84 4,260,165
96 4,260,166
135 4,260,167
225 4,260,168

CLASS 279

62 4,260,169

CLASS 280

276 4,260,170
279 4,260,171
411 A 4,260,172
421 4,260,173
444 4,260,174
629 4,260,175
668 4,260,176
4,260,177
804 4,260,178

CLASS 282

27.5 4,260,179

CLASS 285

9 M 4,260,180
15 4,260,181
23 4,260,182
134 4,260,183
305 4,260,184

CLASS 289

16.5 4,260,185

CLASS 290

42 4,260,901
43 4,260,902
48 4,260,903

CLASS 294

19 R 4,260,186
86 R 4,260,187

CLASS 296

107 4,260,188
223 4,260,189

CLASS 297

361 4,260,190

CLASS 299

1 4,260,191
2 4,260,192
5 4,260,193
11 4,260,194
4,260,195

CLASS 303

6 C 4,260,196
52 4,260,197
92 4,260,198
96 4,260,199
97 4,260,200
99 4,260,201

CLASS 307

113 4,260,904
115 4,260,905
264 4,260,907
270 4,260,908
297 4,260,909
303 4,260,910
310 4,260,911
477 4,260,906
597 4,260,912

CLASS 308

8.2 4,260,202
4,260,203
9 4,260,204
4,260,205

CLASS 310

11 4,260,913
27 4,260,914
49 R 4,260,915
50 4,260,916
71 4,260,917
87 4,260,918
113 4,260,919
156 4,260,920
4,260,921
178 4,260,922
184 4,260,923
213 4,260,924
216 4,260,925
254 4,260,926
300 4,260,927
335 4,260,928

CLASS 312

100 4,260,206
208 4,260,207
242 4,260,208

CLASS 313

184 4,260,929
481 4,260,930
493 4,260,931

CLASS 315

151 Re.30,571
205 4,260,932
326 4,260,933
4,260,934
381 4,260,935

CLASS 318

66 4,260,936
358 4,260,937
434 4,260,938
558 4,260,939
562 4,260,940
4,260,941
565 4,260,942

CLASS 320

21 4,260,943

CLASS 322

48 4,260,944

CLASS 323

241 4,260,948
314 4,260,946
316 4,260,945
322 4,260,947

CLASS 324

302 4,260,949
438 4,260,950

CLASS 328

165 4,260,951

CLASS 329

104 4,260,952

CLASS 330

85 4,260,954
252 Re.30,572
279 4,260,953
288 4,260,955
289 4,260,956

CLASS 331

94.5 N 4,260,957
94.5 PE 4,260,958
111 4,260,959
4,260,960

CLASS 333

21 A 4,260,961
22 R 4,260,962
26 4,260,963
81 A 4,260,965
182 4,260,966
208 4,260,967
214 4,260,968

CLASS 335

38 4,260,969
52 4,260,970
128 4,260,971
129 4,260,972
133 4,260,973
213 4,260,974

CLASS 336

65 4,260,975

CLASS 337

162 4,260,976
318 4,260,977

CLASS 338

34 4,260,978

CLASS 339

14 R 4,260,209
91 B 4,260,211
91 R 4,260,210
97 R 4,260,212
111 4,260,213
4,260,214
258 F 4,260,215
258 S 4,260,216

CLASS 340

32 4,260,980
146.3 H 4,260,979
539 4,260,982
572 4,260,983
630 4,260,984
635 4,260,985
680 4,260,986
756 4,260,987
870.11 4,260,981

CLASS 343

700 MS 4,260,988
704 4,260,989
742 4,260,990
756 4,260,991
761 4,260,992
779 4,260,993
854 4,260,994

CLASS 346

32 4,260,995
75 4,260,996
108 4,260,997
4,260,998

CLASS 350

1.2 4,260,217
16 4,260,218
96.10 4,260,219
96.28 4,260,220
96.31 4,260,221
164 4,260,222
335 4,260,224
353 4,260,225
465 4,260,223

CLASS 351

3 4,260,226
24 4,260,227
160 H 4,260,228

CLASS 352

50 4,260,229

CLASS 354

76 4,260,230
128 4,260,231
152 4,260,232
274 4,260,233
319 4,260,234

CLASS 355

3 CH 4,260,235
4,260,240
3 DD 4,260,239
3 FU 4,260,237
3 TR 4,260,236
4,260,238
14 R 4,260,241
14 TR 4,260,242
15 4,260,243
35 4,260,244
40 4,260,245
45 4,260,246
4,260,247
60 4,260,248
67 4,260,249
113 4,260,250

CLASS 356

121 4,260,251
124 4,260,252

153 4,260,253
154 4,260,254
222 4,260,255
235 4,260,256
246 4,260,257
335 4,260,258
357 4,260,259
365 4,260,260
402 4,260,261
418 4,260,262
448 4,260,263

CLASS 357

34 4,260,999
38 4,261,000
4,261,001
46 4,261,002
49 4,261,003
51 4,261,004
81 4,261,005

CLASS 358

3 4,261,006
5 4,261,007
19 4,261,008
27 4,261,009
67 4,261,010
75 4,261,011
93 4,261,012
139 4,261,013
166 4,261,014
172 4,261,015
195.1 4,261,016
248 4,261,017
263 4,261,018

CLASS 360

40 4,261,019
73 4,261,020
79 4,261,021
90 4,261,022
94 4,261,023
103 4,261,024

CLASS 361

257 4,261,025

CLASS 362

101 4,261,026
255 4,261,027
279 4,261,028
283 4,261,029
296 4,261,030
336 4,261,031

CLASS 363

19 4,261,032

CLASS 364

200 4,261,033
4,261,034
4,261,035
405 4,261,036
464 4,261,037
482 4,261,038
519 4,261,039
554 4,261,040
571 4,261,041
709 4,261,042
725 4,261,043

CLASS 365

8 4,261,044
26 4,261,045

CLASS 366

75 4,260,264
101 4,260,265
336 4,260,266
343 4,260,267

CLASS 368

35 4,261,046
38 4,261,047
69 4,261,048
88 4,261,049
259 4,261,050

CLASS 369

33 4,260,162
58 4,260,161
103 4,260,858
266 4,260,163

CLASS 370

58 4,261,051
59 4,261,052

CLASS 375

60 4,261,053

CLASS 400

121 4,260,268
4,260,269
124 4,260,270
232 4,260,271

CLASS 401

4 4,260,272
48 4,260,273

CLASS 402

80 R 4,260,274

CLASS 403

133 4,260,275
172 4,260,276
235 4,260,277
260 4,260,278

CLASS 404

74 4,260,279
122 4,260,280
127 4,260,281

CLASS 405

1 4,260,282
36 4,260,283
43 4,260,284
68 4,260,285
82 4,260,286
168 4,260,287
4,260,288
169 4,260,289
181 4,260,290
205 4,260,291
217 4,260,292
219 4,260,293
259 4,260,294
269 4,260,295
284 4,260,296
303 4,260,297

CLASS 406

146 4,260,298

CLASS 407

115 4,260,299

CLASS 408

1 R 4,260,300
47 4,260,301
118 4,260,302
168 4,260,303

CLASS 409

132 4,260,304
134 4,260,305
200 4,260,306
225 4,260,307

CLASS 411

3 4,260,005
57 4,259,890
417 4,259,889

CLASS 414

8 4,260,308
46 4,260,309
118 4,260,310
129 4,260,311
292 4,260,312
313 4,260,313
462 4,260,314
469 4,260,315
501 4,260,316
517 4,260,317
589 4,260,318
591 4,260,319
680 4,260,320
694 4,260,321
727 4,260,322
731 4,260,323
735 4,260,324

CLASS 415

2 R 4,260,325
115 4,260,326
200 4,260,327

CLASS 416

17 4,260,328
43 4,260,329
96 R 4,260,336
180 4,260,330
219 R 4,260,331
226 4,260,332

CLASS 417

45 4,260,333
52 4,260,334
68 4,260,335
269 4,260,337
346 4,260,338
406 4,260,339
412 4,260,340
454 4,260,341
458 4,260,342

CLASS 418

269 4,260,343

CLASS 422

56 4,260,579
64 4,260,580
65 4,260,581
151 4,260,583
189 4,260,584
208 4,260,585
269 4,260,586
282 4,260,587

CLASS 423

37 4,260,588
123 4,260,589
226 4,260,590
267 4,260,591
305 4,260,592
388 4,260,593
421 4,260,594

CLASS 424

10 4,260,595
14 4,260,596
49 4,260,597
114 4,260,598
122 4,260,599
166 4,260,600
177 4,260,601
180 4,260,602
182 4,260,603
200 4,260,604
243 4,260,605
244 4,260,606
246 4,260,607
248.54 4,260,608
250 4,260,609
4,260,610
4,260,611
251 4,260,612
256 4,260,613
4,260,614
257 4,260,615
258 4,260,616
260 4,260,617
263 4,260,618
4,260,619
266 4,260,620
267 4,260,621
4,260,622
4,260,623
270 4,260,624
271 4,260,625
273 R 4,260,626
274 4,260,627
4,260,628
4,260,629
283 4,260,630
4,260,631
285 4,260,632
304 4,260,633
324 4,260,634

CLASS 425

63 4,260,344
65 4,260,345
78 4,260,346
113 4,260,351
123 4,260,347
144 4,260,348
150 4,260,349
197 4,260,350
211 4,260,352
224 4,260,353
227 4,260,354
258 4,260,355
311 4,260,356
472 4,260,357
532 4,260,358
543 4,260,359
548 4,260,360

CLASS 426

3 4,260,635
34 4,260,636
96 4,260,637
287 4,260,638
478 4,260,639
516 4,260,640
536 4,260,641
579 4,260,642
606 4,260,643
656 4,260,644

CLASS 427

1 4,260,645
4,260,646
40 4,260,647
45.1 4,260,648
53.1 4,260,649
54.1 4,260,650
214 4,260,651
245 4,260,652
247 4,260,653
253 4,260,654

CLASS 428

31 4,260,655
42 4,260,656
113 4,260,657
163 4,260,658
217 4,260,659
284 4,260,660
389 4,260,661
433 4,260,662
472 4,260,663
476.9 4,260,664
633 4,260,665
668 4,260,666

CLASS 429

112 4,260,667
194 4,260,668
215 4,260,669

CLASS 430

5 4,260,670
67 4,260,671
72 4,260,672
143 4,260,673
271 4,260,674
315 4,260,675
517 4,260,676
618 4,260,677

CLASS 431

1 4,260,361
69 4,260,362
76 4,260,363
160 4,260,364
291 4,260,365
298 4,260,366
353 4,260,367

CLASS 432

1 4,260,368
3 4,260,369
14 4,260,370
82 4,260,371
103 4,260,372
110 4,260,373

CLASS 433

3 4,260,374
11 4,260,375
29 4,260,376
58 4,260,377
93 4,260,378
102 4,260,379
119 4,260,380
126 4,260,381
4,260,382
225 4,260,383

CLASS 434

16 4,260,384
83 4,259,790
208 4,260,385
338 4,259,788
366 4,259,789

CLASS 435

7 4,260,678
10 4,260,679
14 4,260,680
24 4,260,681
4,260,682
74 4,260,683
106 4,260,684
161 4,260,685
265 4,260,686
301 4,260,687

CLASS 455

12 4,261,054
158 4,261,055
273 4,261,056

CLASS 474

28 4,259,874
72 4,260,386
82 4,259,873
903 4,260,387

CLASS 521

54 4,260,688

CLASS 525

27 4,260,699
55 4,260,689
64 4,260,690
102 4,260,698
113 4,260,700
130 4,260,691
148 4,260,693
273 4,260,692
303 4,260,701
314 4,260,694
330 4,260,705
334 4,260,702
455 4,260,703
466 4,260,695
477 4,260,696
484 4,260,697
501 4,260,704

CLASS 526

68 4,260,722
100 4,260,706
114 4,260,707
115 4,260,723
125 4,260,708
137 4,260,709
142 4,260,710
153 4,260,711
181 4,260,712
215 4,260,713
229 4,260,724
271 4,260,714
279 4,260,725

CLASS 528

15 4,260,726
45 4,260,716
4,260,727
57 4,260,728
59 4,260,717
60 4,260,718
68 4,260,729
109 4,260,720
145 4,260,730
173 4,260,731
192 4,260,732
196 4,260,719
219 4,260,733
272 4,260,721
4,260,734
279 4,260,735

CLASS 533

26 4,260,964

CLASS 536

5 4,260,736
28 4,260,737
49 4,260,738
61 4,260,739
63 4,260,740
114 4,260,741

CLASS 542

127 4,260,742
442 4,260,743

CLASS 544

8 4,260,744
16 4,260,745
27 4,260,747
021 4,260,746
106 4,260,748
166 4,260,749
178 4,260,750
183 4,260,751
190 4,260,752
208 4,260,753
215 4,260,754
236 4,260,755
4,260,756
238 4,260,757
262 4,260,758
333 4,260,759
396 4,260,760

CLASS 546

66 4,260,761
84 4,260,762
144 4,260,763
153 4,260,764
280 4,260,765
303 4,260,766
306 4,260,767

CLASS 548

112 4,260,769
159 4,260,770
187 4,260,771
255 4,260,772
4,260,773
261 4,260,768
336 4,260,774
362 4,260,775
364 4,260,776

CLASS 549

33 4,260,777
52 4,260,778
4,260,779

CLASS 556

430 4,260,780
453 4,260,715

CLASS 560

24 4,260,781
43 4,260,782
53 4,260,783
4,260,784
4,260,785
4,260,786
4,260,787
4,260,788
4,260,789
4,260,790
4,260,791
4,260,792
4,260,793
4,260,794
4,260,795
4,260,796
4,260,797
4,260,798
4,260,799
4,260,800
4,260,801
71 4,260,802
108 4,260,803
117 4,260,804
118 4,260,805
4,260,806
121 4,260,807
131 4,260,808
138 4,260,809
204 4,260,810
218 4,260,811
223 4,260,812
234 4,260,813
266 4,260,814

CLASS 562

401 4,260,815
452 4,260,816
487 4,260,817
503 4,260,818
4,260,819
517 4,260,820
532 4,260,821
549 4,260,822
571 4,260,823

CLASS 564

42 4,260,824
300 4,260,562
384 4,260,825

CLASS 568

11 4,260,826
414 4,260,827
454 4,260,828
462 4,260,829
485 4,260,830
719 4,260,831
784 4,260,832
789 4,260,833
918 4,260,836
931 4,260,837
947 4,260,838

CLASS 585

257 4,260,839
259 4,260,840
319 4,260,841
377 4,260,842
467 4,260,843
523 4,260,844
640 4,260,845
730 4,260,846
833 4,260,847

CLASSIFICATION OF DESIGNS

D2—	4	258,770		143	258,783		10	258,796		106	258,807		30	258,823	D23—	25	258,835
	276	258,771		157	258,784	D8—	14.1	258,797		116	258,809		54	258,821		26	258,836
	309	258,772		167	258,785		57	258,798	D11—	2	258,812		89	258,822		60	258,834
	320	258,773		179	258,786		382	258,799	D12—	53	258,817	D16—	42	258,825	D24—	10	258,838
		258,774			258,787		394	258,804		64	258,813	D18—	4	258,826		21	258,837
	354	258,775			258,788	D9—	300	258,800		94	258,815		7	258,827	D25—	69	258,839
D3—	21	258,776			258,789		378	258,802		129	258,816		22	258,828	D27—	39	258,840
	24	258,777		186	258,790		409	258,801		162	258,814	D20—	10	258,829	D28—	68	258,842
	31	258,778			258,791	D10—	3	258,811	D13—	10	258,818	D21—	108	258,830		83	258,841
D4—	06	258,779		191	258,792		15	258,808	D14—	73	258,820		204	258,832	D29—	7	258,843
D6—	104	258,781		201	258,793		44	258,806		76	258,819		207	258,831	D30—	13	258,844
	105	258,780		240	258,794		46	258,810	D15—	23	258,824	D22—	27	258,833	D99—	49	258,803
	140	258,782	D7—	9	258,795		75	258,805									

CLASSIFICATION OF PLANTS

P.—	10	4,681			4,682		30	4,683		51	4,684		65	4,685		76	4,686

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

29—	577 C	T100,501	123—	416	T100,502	426—	549	T100,503	528—	302	T100,504	542—	444	T100,505			

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

6 : 4,259,780
4,260,154
4,260,360
4,260,455
4,260,597
4,260,667
4,261,007
9 : 4,260,875
01 : 4,260,009
4,260,251
4,260,255
4,260,653
04 : 4,259,817
4,259,872
4,259,901
4,259,971
4,260,157
4,260,444
4,260,619
4,260,852
4,260,947
4,260,962
05 : 4,260,136
4,260,282
06 : Re.30,571
4,259,747
4,259,748
4,259,752
4,259,754
4,259,776
4,259,782
4,259,785
4,259,804
4,259,818
4,259,825
4,259,828
4,259,843
4,259,875
4,259,945
4,259,947
4,259,952
4,259,956
4,259,959
4,259,968
4,259,976
4,260,005
4,260,019
4,260,077
4,260,084
4,260,111
4,260,117
4,260,124
4,260,134
4,260,156
4,260,159
4,260,180
4,260,181
4,260,187
4,260,198
4,260,202
4,260,203
4,260,208
4,260,218
4,260,227
4,260,234
4,260,254
4,260,257
4,260,258
4,260,267
4,260,286
4,260,287
4,260,288
4,260,293
4,260,296
4,260,310
4,260,311
4,260,332
4,260,346
4,260,374
4,260,380
4,260,386
4,260,410
4,260,437
4,260,471
4,260,473
4,260,475
4,260,508
4,260,578
4,260,584
4,260,624
4,260,633
4,260,638
4,260,649
4,260,656
4,260,657
4,260,658
4,260,681
4,260,688
4,260,696
4,260,701
4,260,714
4,260,741
4,260,757
4,260,824
4,260,855
4,260,876
4,260,885
4,260,888
4,260,890
4,260,896
4,260,911
4,260,921
4,260,936
4,260,939
4,260,942
4,260,950
4,260,951
4,260,954
4,260,964
4,261,019
4,261,020
4,261,022
4,261,034
4,261,043
4,261,045
08 : 4,259,890
4,259,961
4,260,036
4,260,073
4,260,086
4,260,235
4,260,249
4,260,419
4,260,456
4,260,914
09 : 4,259,762
4,259,799
4,259,902
4,259,911
4,259,927
4,259,964
4,260,243
4,260,328
4,260,336
4,260,342
4,260,367
4,260,441
4,260,480
4,260,505
4,260,552
4,260,598
4,260,661
4,260,718
4,260,728
4,260,764
4,260,899
4,260,917
4,260,928
4,260,940
4,260,941
4,260,958
4,260,990
10 : 4,259,766
4,259,768
4,260,428
4,260,429
4,260,518
4,260,629
11 : 4,260,085
4,260,837
12 : 4,259,805
4,259,841
4,259,858
4,259,917
4,259,962
4,260,011
4,260,026
4,260,076
4,260,079
4,260,082
4,260,125
4,260,185
4,260,283
4,260,301
4,260,348
4,260,349
4,260,431
4,260,436
4,260,468
4,260,682
4,260,705
4,260,863
4,261,039
4,261,054
13 : 4,260,382
4,260,517
4,261,021
16 : 4,259,848
4,260,933
17 : 4,259,788
4,259,790
4,259,827
4,259,832
4,259,882
4,259,888
4,259,892
4,259,923
4,259,948
4,259,960
4,260,012
4,260,051
4,260,059
4,260,070
4,260,090
4,260,092
4,260,107
4,260,112
4,260,119
4,260,132
4,260,174
4,260,229
4,260,322
4,260,323
4,260,324
4,260,334
4,260,365
4,260,426
4,260,479
4,260,484
4,260,502
4,260,516
4,260,531
4,260,546
4,260,567
4,260,643
4,260,693
4,260,730
4,260,737
4,260,833
4,260,848
4,260,850
4,260,853
4,260,859
4,260,925
4,261,014
18 : 4,260,135
4,260,215
4,260,279
4,260,362
4,260,509
4,260,579
4,260,634
4,260,745
4,260,918
4,260,943
4,260,952
4,260,975
19 : 4,259,831
4,259,838
4,260,064
4,260,172
4,260,321
4,260,352
4,260,443
4,260,963
20 : 4,259,814
4,259,941
4,260,027
4,260,290
4,260,371
4,260,692
4,260,769
21 : 4,259,924
4,260,278
4,260,305
4,260,384
4,260,402
4,260,996
22 : 4,260,071
4,260,226
4,260,291
4,260,461
4,260,840
23 : 4,259,943
4,260,128
24 : Re.30,568
4,259,757
4,259,797
4,259,840
4,259,906
4,259,909
4,260,035
4,260,055
4,260,106
4,260,262
4,260,276
4,260,396
4,260,398
4,260,454
4,260,587
4,260,660
4,260,901
4,260,967
25 : 4,259,844
4,259,966
4,259,988
4,259,989
4,259,998
4,260,058
4,260,080
4,260,213
4,260,252
4,260,394
4,260,420
4,260,493
4,260,582
4,260,617
4,260,854

4,260,894
4,260,898
4,260,982
4,261,012
4,261,032
4,261,033
4,261,035
26 : 4,259,758
4,259,812
4,259,862
4,259,863
4,259,895
4,259,918
4,259,931
4,259,932
4,260,056
4,260,072
4,260,091
4,260,176
4,260,225
4,260,250
4,260,277
4,260,306
4,260,309
4,260,314
4,260,379
4,260,417
4,260,469
4,260,538
4,260,623
4,260,766
4,260,783
4,260,784
4,260,785
4,260,786
4,260,787
4,260,788
4,260,789
4,260,790
4,260,791
4,260,792
4,260,793
4,260,794
4,260,795
4,260,796
4,260,797
4,260,798
4,260,799
4,260,800
4,260,801
4,260,807
4,260,811
4,260,819
4,260,825
4,260,826
4,260,868
4,260,877
4,261,015
27 : 4,259,815
4,259,885
4,259,981
4,259,987
4,260,060
4,260,061
4,260,099
4,260,101
4,260,138
4,260,148
4,260,244
4,260,313
4,260,320
4,260,547
4,260,659
4,260,673
4,260,676
4,260,677
4,260,702
4,260,727
4,260,912
4,260,995
28 : 4,259,764
4,260,281
29 : 4,259,954
4,260,123

4,260,182
4,260,214
4,260,506
4,260,542
4,260,635
4,260,980
30 : 4,259,833
31 : 4,259,803
4,259,887
4,259,950
4,260,040
4,260,376
32 : 4,260,087
4,260,589
33 : 4,260,029
4,261,005
34 : Re.30,566
4,260,572
4,259,749
4,259,767
4,259,778
4,259,779
4,259,784
4,259,813
4,259,822
4,259,849
4,259,856
4,259,914
4,259,915
4,259,922
4,259,985
4,260,007
4,260,008
4,260,043
4,260,054
4,260,066
4,260,068
4,260,075
4,260,104
4,260,143
4,260,192
4,260,207
4,260,221
4,260,247
4,260,253
4,260,318
4,260,366
4,260,373
4,260,392
4,260,416
4,260,423
4,260,432
4,260,467
4,260,470
4,260,497
4,260,501
4,260,511
4,260,512
4,260,513
4,260,525
4,260,527
4,260,528
4,260,533
4,260,534
4,260,535
4,260,543
4,260,548
4,260,550
4,260,570
4,260,600
4,260,618
4,260,620
4,260,627
4,260,641
4,260,642
4,260,647
4,260,651
4,260,666
4,260,685
4,260,687
4,260,694
4,260,711
4,260,738
4,260,743

4,260,762
4,260,768
4,260,772
4,260,773
4,260,781
4,260,814
4,260,815
4,260,818
4,260,821
4,260,830
4,260,836
4,260,839
4,260,841
4,260,842
4,260,843
4,260,851
4,260,892
4,260,905
4,260,932
4,260,945
4,260,946
4,260,955
4,260,956
4,260,970
4,260,994
4,261,008
4,261,018
4,261,027
4,261,056
36 : 4,259,755
4,259,756
4,259,800
4,259,806
4,259,807
4,259,837
4,259,850
4,259,867
4,259,870
4,259,951
4,259,955
4,259,974
4,260,000
4,260,003
4,260,023
4,260,074
4,260,089
4,260,098
4,260,131
4,260,151
4,260,173
4,260,210
4,260,216
4,260,256
4,260,259
4,260,261
4,260,269
4,260,298
4,260,299
4,260,304
4,260,325
4,260,327
4,260,359
4,260,375
4,260,383
4,260,385
4,260,405
4,260,406
4,260,440
4,260,447
4,260,451
4,260,465
4,260,476
4,260,483
4,260,499
4,260,553
4,260,596
4,260,637
4,260,648
4,260,664
4,260,671
4,260,678
4,260,719
4,260,725
4,260,732

4,260,733
4,260,755
4,260,756
4,260,759
4,260,767
4,260,802
4,260,805
4,260,816
4,260,846
4,260,858
4,260,864
4,260,873
4,260,919
4,260,922
4,261,000
4,261,001
4,261,003
4,261,006
4,261,041
37 : 4,259,770
4,259,997
4,260,078
4,260,088
4,260,350
4,260,401
4,260,412
4,260,555
4,260,573
4,260,574
4,260,758
4,260,849
4,260,879
4,260,907
38 : 4,260,459
39 : Re.30,569
4,259,774
4,259,842
4,259,860
4,259,877
4,259,889
4,259,984
4,259,986
4,260,046
4,260,047
4,260,183
4,260,184
4,260,265
4,260,341
4,260,397
4,260,439
4,260,442
4,260,449
4,260,500
4,260,514
4,260,519
4,260,529
4,260,626
4,260,655
4,260,669
4,260,699
4,260,700
4,260,706
4,260,712
4,260,809
4,260,832
4,260,861
4,260,867
4,260,889
4,260,972
4,261,026
40 : Re.30,567
4,259,868
4,260,105
4,260,164
4,260,450
4,260,568
4,260,708
4,260,845
4,260,881
41 : 4,259,816
4,260,034
4,260,109
4,260,425
42 : 4,259,750

4,259,760
4,259,772
4,259,773
4,259,775
4,259,808
4,259,810
4,259,835
4,259,845
4,259,866
4,259,946
4,259,957
4,259,977
4,260,004
4,260,014
4,260,052
4,260,095
4,260,103
4,260,114
4,260,130
4,260,140
4,260,141
4,260,145
4,260,209
4,260,212
4,260,273
4,260,274
4,260,294
4,260,369
4,260,390
4,260,403
4,260,404
4,260,408
4,260,409
4,260,415
4,260,418
4,260,427
4,260,438
4,260,462
4,260,485
4,260,491
4,260,537
4,260,566
4,260,609
4,260,654
4,260,670
4,260,675
4,260,716
4,260,717
4,260,720
4,260,739
4,260,748
4,260,760
4,260,761
4,260,771
4,260,806
4,260,808
4,260,822
4,260,872
4,260,886
4,260,909
4,260,924
4,260,960
4,260,976
4,261,013
4,261,017
44 : 4,260,147
45 : 4,259,791
4,259,910
4,259,958
4,259,991
4,260,028
4,260,116
4,260,556
46 : 4,260,137
47 : 4,259,944
4,260,169
4,260,494
4,260,569
4,260,591
4,260,742
48 : 4,259,798
4,259,975
4,260,016

4,260,017
4,260,018
4,260,020
4,260,021
4,260,030
4,260,031
4,260,032
4,260,044
4,260,062
4,260,108
4,260,133
4,260,167
4,260,171
4,260,186
4,260,193
4,260,206
4,260,211
4,260,292
4,260,363
4,260,421
4,260,453
4,260,463
4,260,498
4,260,820
4,260,844
4,260,862
4,260,869
4,260,908
4,260,949
4,260,959
4,260,979
4,260,992
4,261,030
4,261,037
4,261,044
49 : 4,259,777
4,259,824
50 : 4,259,793
51 : Re.30,570
4,259,821
4,259,834
4,259,886
4,259,969
4,259,970
4,260,069
4,260,150
4,260,155
4,260,393
4,260,457
4,260,486
4,260,606
4,260,650
4,260,735
4,260,902
4,261,053
53 : 4,259,826
4,260,158
4,260,576
4,260,646
4,260,880
4,260,957
4,261,040
4,260,195
4,260,395
4,260,407
4,260,490
4,260,703
4,260,828
4,259,847
4,259,878
4,259,883
4,259,900
4,259,982
4,260,100
4,260,316
4,260,435
4,260,487
4,260,549
4,260,575
4,260,780
4,260,804
4,260,937
56 : 4,260,271

DESIGN PATENTS

6 : 258,808
258,810
06 : 258,778
258,805
258,829
258,838
258,842
258,844
08 : 258,825
13 : 258,804

258,815
17 : 258,790
258,802
258,819
258,823
18 : 258,806
258,839
20 : 258,779
21 : 258,795

24 : 258,797
258,834
25 : 258,772
258,773
26 : 258,780
258,793
258,816
27 : 258,826
28 : 258,812

34 : 258,770
258,798
258,803
258,809
258,818
258,835
258,836
36 : 258,775
258,784

258,785
258,794
258,796
39 : 258,800
258,801
258,821
42 : 258,777
258,843
48 : 258,776

258,786
258,787
258,788
258,789
258,791
258,799
258,814
258,827
53 : 258,783

PLANT PATENTS

06 : 4,683

36 : 4,685

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

18 : T100,505

36 : T100,501

47 : T100,503

T100,504

U.S. GOVERNMENT PRINTING OFFICE : O—1981

CHANGE OF ADDRESS FORM

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

Mail this form to: NEW ADDRESS

Superintendent of Documents
Government Printing Office SSOM
Washington, D.C. 20402

Attach last subscription label here.

SUBSCRIPTION ORDER FORM

SUBSCRIPTION ORDER FORM

ENTER MY SUBSCRIPTION TO:

@ $ Domestic; @ $ Foreign.

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

☐ Remittance Enclosed (Make checks payable to Superintendent of Documents)

☐ Charge to my Deposit Account No. .....

MAIL ORDER FORM TO:
Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

U.S. DEPARTMENT OF COMMERCE
Malcolm Baldrige *Secretary*
PATENT AND TRADEMARK OFFICE
René D. Tegtmeyer *Acting Commissioner*